The Journal of the International College of Surgeons

Official Monthly publication of the International College of Surgeons

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ANUARY, 1960

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Official Journal of the International College of Surgeons, Published Monthly
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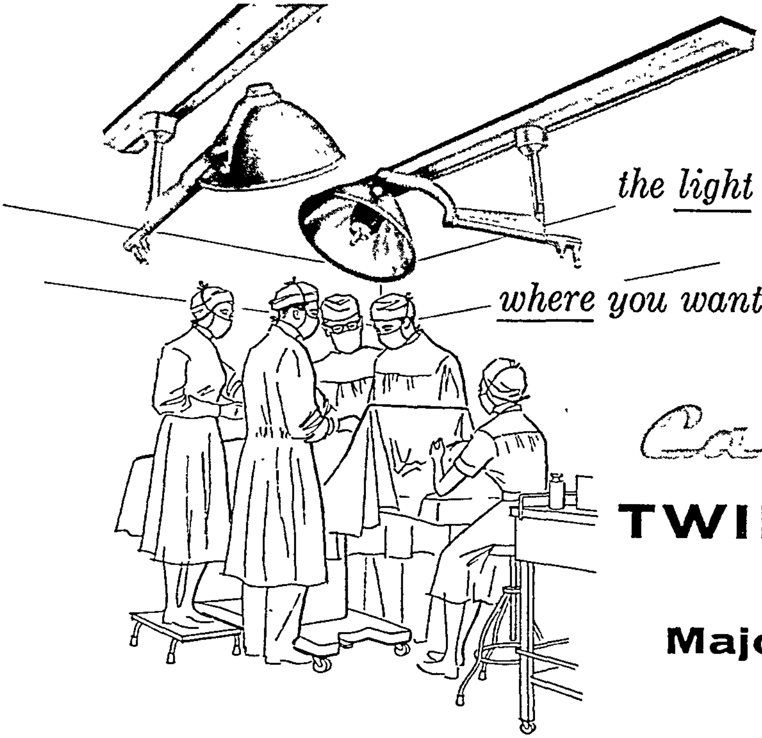

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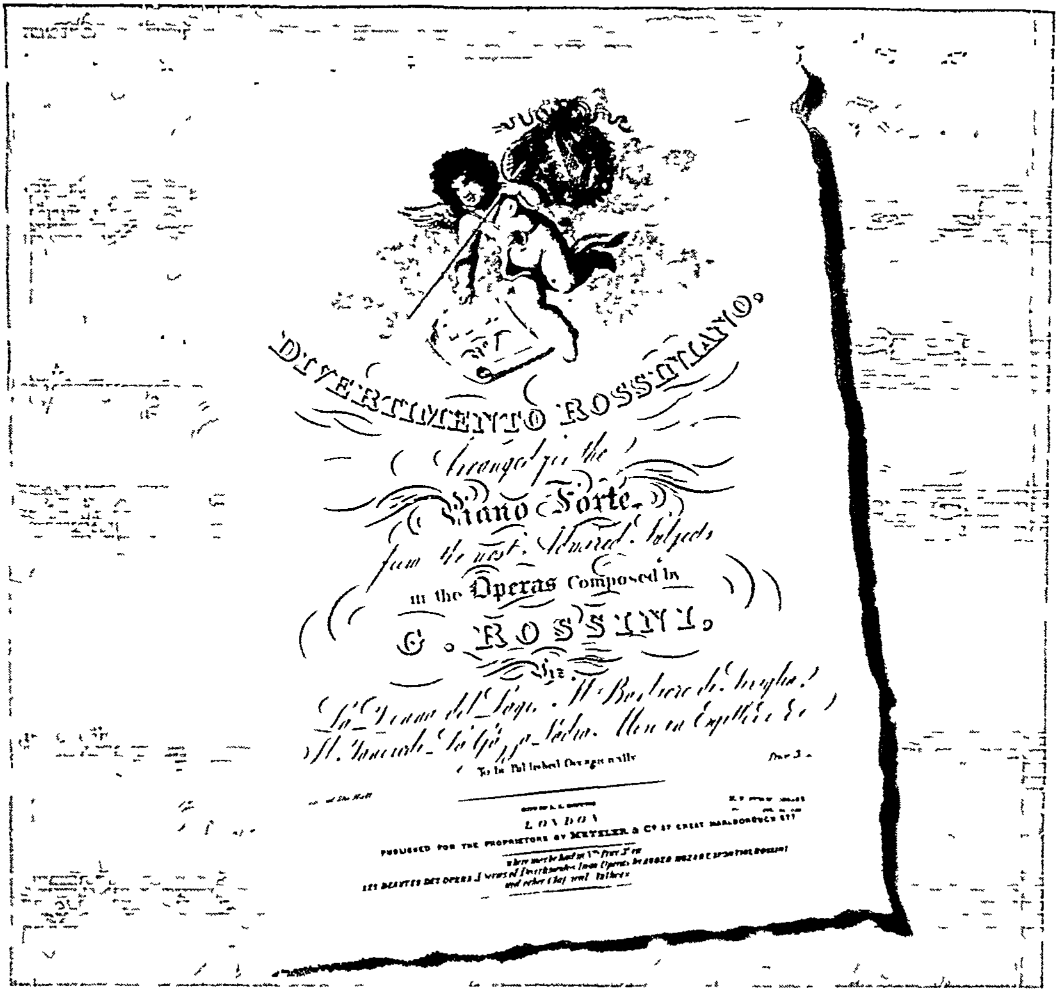

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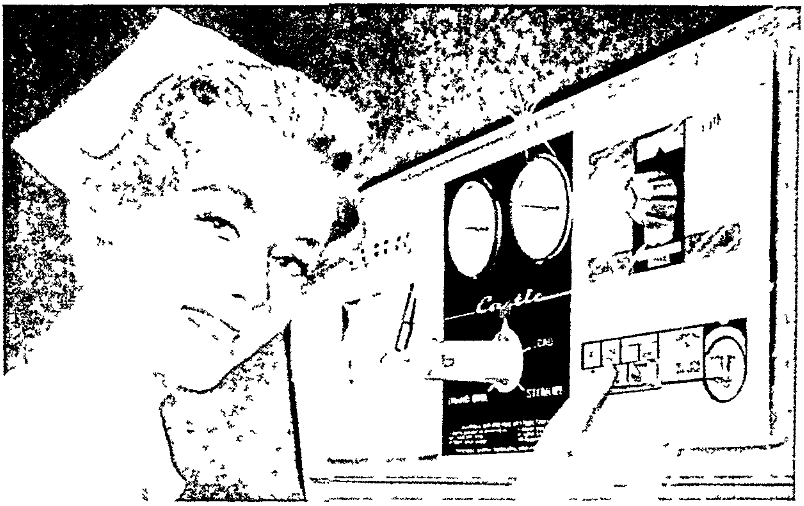

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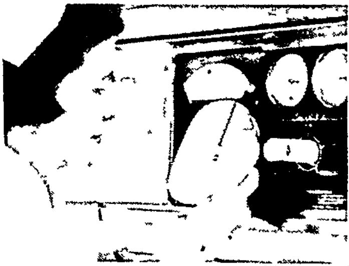

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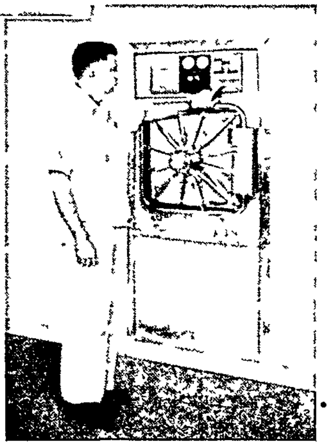

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The Journal of the International College of Surgeons

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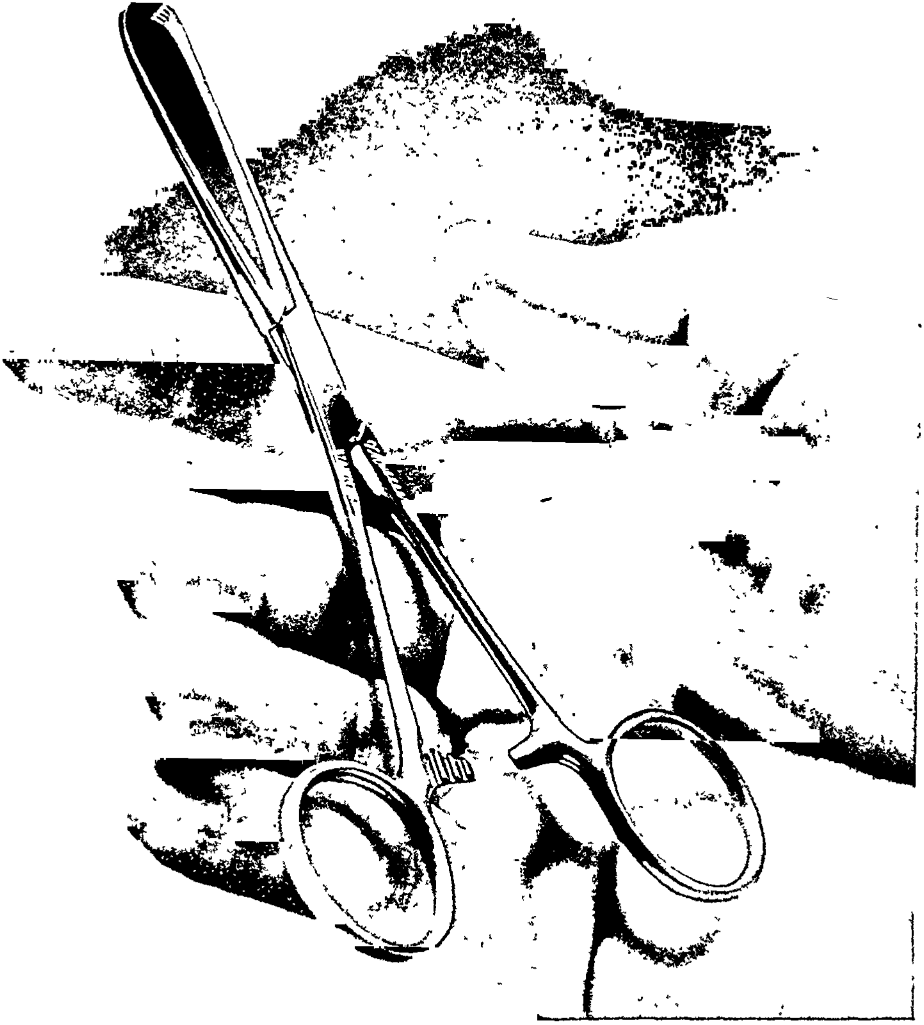

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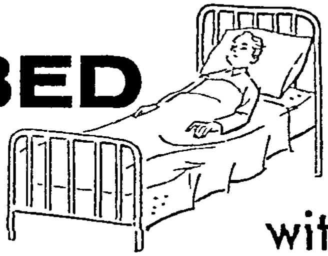

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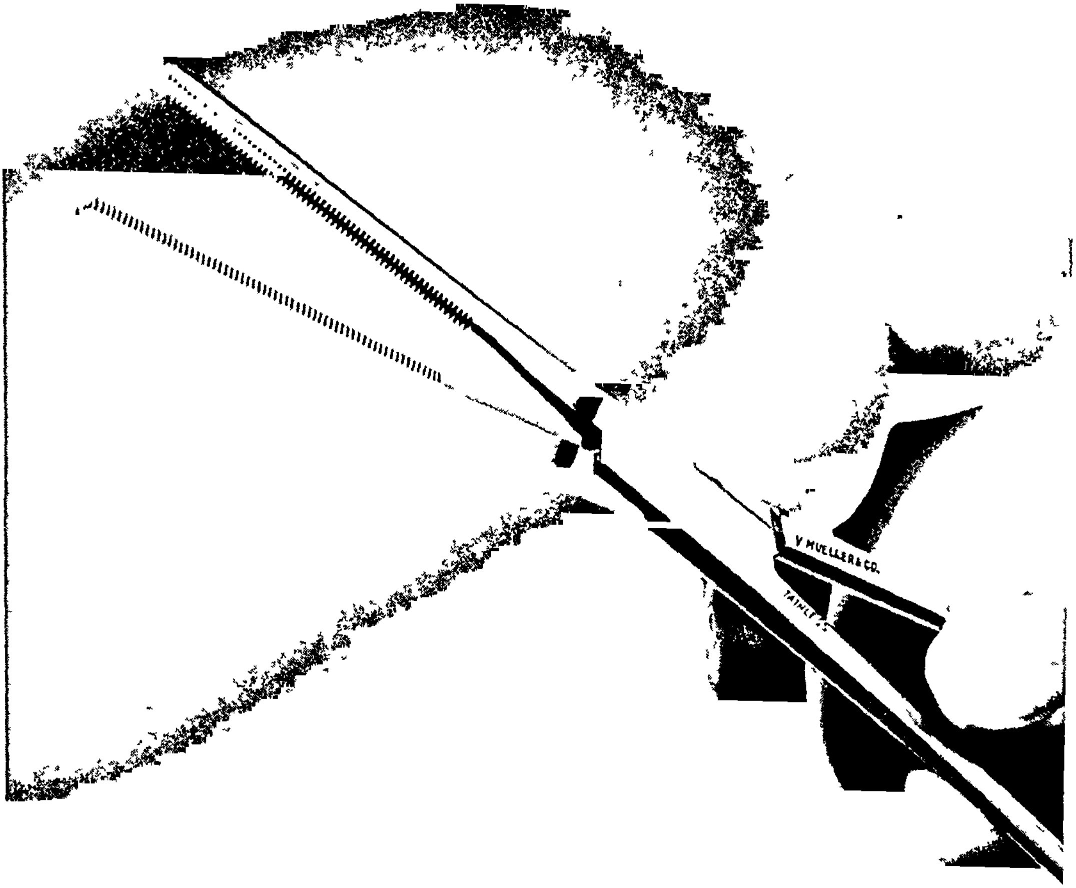

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The Journal of the International College of Surgeons

Official monthly publication of the International College of Surgeons

VOLUME 33, NUMBER 6
JUNE, 1960

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Official Journal of the International College of Surgeons, Published Monthly
PUBLICATION OFFICE: 1516 Lake Shore Drive, Chicago 10, Ill.
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A series of 172 consecutive cases of acute cholecystitis observed by one surgeon over a nine-year period is presented. Preparation by relief of pain, administration of fluids, and use of suction if needed; the value of cholecystographic study and, when necessary, gastrointestinal series and tests of hepatic function, and the care of concomitant disease as preparation for surgical treatment are described.

The time selected for operation is usually after one night, occasionally two nights, and rarely more, so that the best concerted attack on the disease may be made, i.e., cholecystectomy.

The concept of a critical period of four to twelve days, in the author's opinion, is fallacious. The operation should be done whenever the symptoms and signs fail to subside, regardless of the time interval, after the diagnosis is certain and after adequate preparation of the patient. Cholecystectomy was done in 159 of 162 cases in which the patients were subjected to operation.

twelve days after the inception of the disease is undesirable.

5. To stress the fact that it is rarely necessary to have the operation performed as a highly emergent measure in the latter part of the night or early morning by inexperienced surgical personnel with inadequate help and with less than good anesthesia, and to show that a resident may obtain good staff supervision and help at the operating table and good anesthesia at a time when these are available. Attention to these details will eliminate cholecystostomies done for this disease and enable cholecystectomy to be performed in most instances.

After the diagnosis of acute cholecystitis is made, immediate care resolves itself into relieving pain, insuring an adequate fluid intake, using suction if necessary, clearing up any doubt as to diagnosis and evaluating and treating concomitant disease. Antibiotics have been used infrequently, usually for complications. If the patient is in great pain, the intravenous use of Demerol or morphine with atropine produces rapid and dramatic relief. Analgesics are then ordered as needed. If the patient has been taking liquids by mouth without nausea or vomiting, these may be continued. If the patient has had nausea and vomiting, suction should be instituted and fluids given by the intravenous route. Few of the patients in this series were operated upon during the same day. Some were held over to the following day. More than half came to operation after twenty-four hours in the hospital and about a third after forty-eight hours (Table 1).

TABLE 1.—*Interval in Hours Between Onset of Acute Cholecystitis and Admission to the Operating Room**

Year	*Less than 24 hr.*	*24-48 hr.*	*More than 48 hr.*	*Not Operated on*	*Total*
1950	13	2	3	0	18
1951	10	1	2	1	14
1952	9	7	7	2	25
1953	14	6	9	1	30
1954	7	6	3	3	19
1955	6	6	9	3	24
1956	7	2	4	0	13
1957	2	4	6	0	12
1958	6	2	9	0	17
	74	36	52	10	172
Per cent	45.8	22.2	32.0		

*Data based on a total of 162 operations.

Early in this series, in cases of doubt, an oral cholecystogram was ordered. Intravenous cholecystographic studies were not made. It soon became apparent that a nonvisualizing cholecystogram, when the dye had not been lost, was excellent corroborative evidence of acute cholecystitis with block of the cystic duct or the neck of the gallbladder so that the dye was unable to enter the organ. It was important to determine that sufficient dye had been absorbed. A large amount of dye in the stomach meant that sufficient dye had not passed through the pylorus and could not have been absorbed even by a normal gallbladder (Fig. 1). In the presence of nonvisualization, the dye that was usually seen in the right half of the colon meant that enough had entered the intestinal tract to be absorbed but that the gallbladder had not taken it up. This was a significant observation (Fig. 2).[2] When a penetrating duodenal ulcer was suspected, a gastrointestinal series was ordered for the following morning. This was frequently done in conjunction with the taking of a cholecystogram. If hepatic insufficiency was considered, bromsulphalein and cephalin flocculation or other indicated tests were also performed. An electrocardiogram and a test for fasting blood sugar made it possible to eliminate or treat the two diseases, coronary arteriosclerosis and diabetes, so often associated with inflammation of the gallbladder. By such a pattern of management it was possible to increase assurance in diagnosis and have a patient whose pain, fluid balance and other complicating diseases were controlled. Usually these objectives could be accomplished in twenty-four hours; occasionally forty-eight hours were required, and in rare cases more time was desirable. Dur-

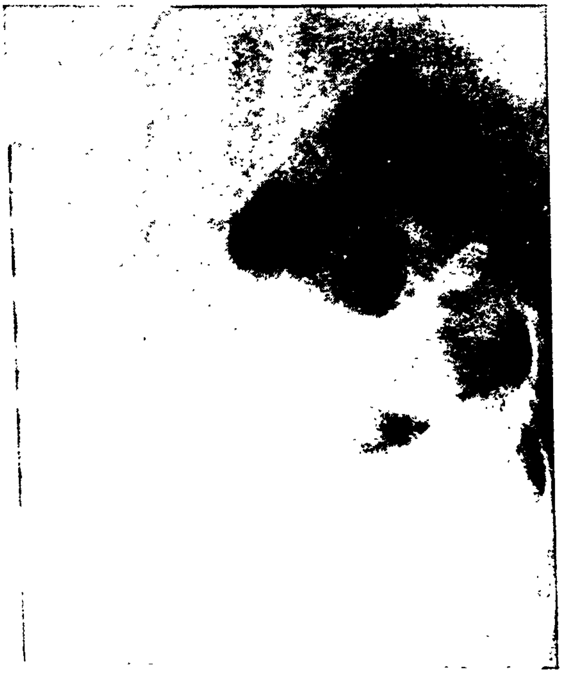

Fig. 1.—Large amount of dye in stomach means that sufficient dye has not passed through pylorus and therefore cannot be absorbed even by normal gallbladder.

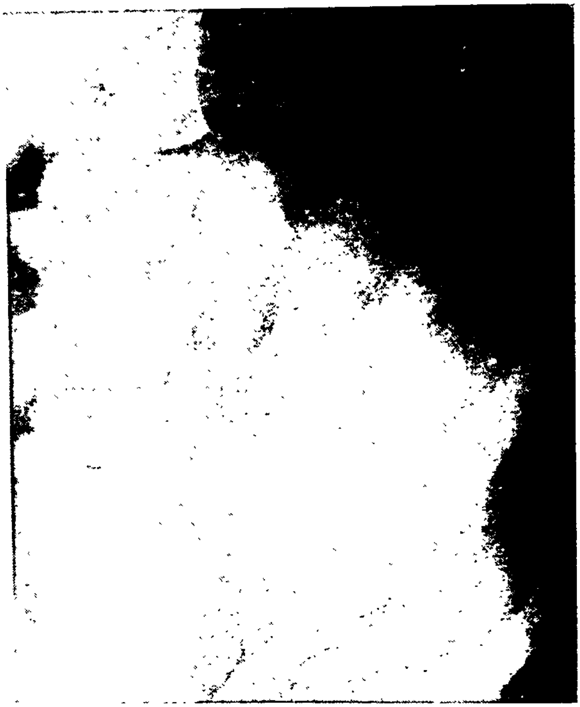

Fig. 2.—With nonvisualization, dye seen usually in right half of colon means that enough has entered intestinal tract to be absorbed but that gallbladder has not taken it up. This is a significant observation.

ing this period of observation and preparation, if the symptoms and signs subsided, operation might be deferred. If pain continued to be severe, the mass in the right upper abdominal quadrant remained tender and the overlying abdominal wall was rigid, or if fever developed, operation was elected. Records of the earlier years of the series show that most of the patients were operated on during the first twenty-four hours of hospitalization. In the later years, most of them were operated on after twenty-four hours. One hundred and seventy-two consecutive cases of acute cholecystitis from Jan. 1, 1950 to Dec. 31, 1958, constitute this series. Each of the 162 patients subjected to operation presented a tender mass in the right upper quadrant of the abdomen; this proved to be the distended gallbladder itself or omentum and surrounding structures enveloping the tense organ upon laparotomy. In each instance the gallbladder was acutely inflamed, was tense, with a markedly thickened wall, and did not empty.

Table 2 demonstrates the sex and age incidence. The percentage of male patients with acute cholecystitis is relatively great in this series; there were 64 such patients in 172 cases (37 per cent). Attention has been called to this by Clifford.[3] In his series of acute gangrenous cholecystitis, there were 54 female and 46 male patients. Glenn and Moore,[4] however, noted that acute cholecystitis was five times as frequent in the female. Chronic disease of the gallbladder in the male is observed much less frequently than in the female; in a coincident personal series of chronic cholecystitis, only 73 of 395 patients were male (18 per cent). The peak age incidence of acute cholecystitis was in the decade from 50 to 59 (42 cases) with the decades 40 to 49 (40 cases) and 60 to 69 (38 cases) next in frequency. No patient under the age of 20 was observed in this series. Nine in the third decade of life were treated; only 1 of these was male. Among patients in the seventh decade, however, there was an equal number of men and women (19), and among those in the eighth decade there were more men than women (6 to 5). In a concomitant series of 395 cases of chronic cholecystitis, the peak age incidence was in the decade from 50 to 59 (113—24 men, 89 women), with the decades 40 to 49 (86—17 men, 69 women) and 60 to 69 (79—16 men, 63 women) next in frequency. No patients under 20 were seen, and 28 (3 men, 25 women) in the third decade of life were treated.

TABLE 2.—*Acute and Chronic Cholecystitis: Sex and Age Incidence*

	20-29 Yr.	*30-39 Yr.*	*40-49 Yr.*	*50-59 Yr.*	*60-69 Yr.*	*70-79 Yr.*	*80-89 Yr.*	*Totals*	
Acute									
Male patients	1	10	13	15	19	6	0	64	(37%)
Female patients	8	20	27	27	19	5	2	108	(63%)
	9	30	40	42	38	11	2	172	
Chronic									
Male patients	3	9	17	24	16	4	0	73	(18%)
Female patients	25	59	69	89	63	16	1	322	(82%)
	28	68	86	113	79	20	1	395	

Table 3 shows the time from onset of symptoms to admission to the hospital. Sixty-one patients came to the hospital in less than 48 hours; of these, 46 entered within twenty-four hours. One hundred and eleven were admitted after forty-eight hours, and 89 of these came to the hospital after seventy-two hours. Table 1 gives the time from admission to operation. Of 162 surgical patients, 74 were operated upon within the first twenty-four hours of their admission to the hospital. In these cases the operation was usually performed on the following day, when adequate diagnosis and preparation had been made. Eighty-eight were operated upon after twenty-four hours; of these, 52 came to operation more than forty-eight hours after admission. Two patients were cholecystectomized later, during an interval phase.

Table 4 shows the time from onset of symptoms to operation. Of 162 surgically treated patients, 120 were operated upon more than seventy-two hours after the start of the disease, 96 of them after ninety-six hours.

TABLE 3.—*Interval Between Onset of Acute Cholecystitis and Admission to the Hospital*

	Less than 24 hr.	*24-48 hr.*	*48-72 hr.*	*More than 72 hr.*	*Total*
	46	15	22	89	172
Per cent	26.8	8.7	12.8	51.7	

TABLE 4.—*Interval Between Onset of Acute Cholecystitis and Operation in 162 Cases*

	Less than 24 hr.	*24-48 hr.*	*48-72 hr.*	*72-96 hr.*	*More than 96 hr.*	*Not operated*	*Total*
	15	14	13	24	96	10	172
Per cent	9.3	8.7	8	14.8	59.2		

TABLE 5.—*Microscopic Pathologic Picture in 160 Cases of Acute Cholecystitis*

Acute		113
With gangrene	19	
With perforation	12	
With spontaneous cholecystoduodenal fistula	1	
With carcinoma	1	
Chronic		47
		160

TABLE 6.—*Interval Between Onset of Acute Cholecystitis and Surgical Therapy, Correlated with Microscopic Pathologic Data*

Acute Cholecystitis with Acute Microscopic Pathologic Change

Less than 24 hr.	*24-48 hr.*	*48-72 hr.*	*72-96 hr.*	*More than 96 hr.*	*Total*
10	11	9	18	65	113

Acute Cholecystitis with Chronic Microscopic Pathologic Change

Less than 24 hr.	*24-48 hr.*	*48-72 hr.*	*72-96 hr.*	*More than 96 hr.*	*Total*
5	4	3	6	29	47
					160

Table 5 indicates the microscopic pathologic picture in these cases. Of 160 gallbladders removed, 113 demonstrated acute cholecystitis microscopically; of these, 19 showed gangrene and 12 revealed gross perforation. One patient had carcinoma of the gallbladder with acute cholecystitis. In 47 cases in which a clinical and gross pathologic picture of acute cholecystitis was present, there was a microscopic diagnosis of chronic cholecystitis. Grossly the 47 patients all showed distention and marked edema, but the microscopic diagnosis was listed as final. In 1 patient a spontaneous cholecystoduodenal fistula developed while he was on a medical service. Jejunal gallstone ileus necessitated jejunotomy for removal of three large calculi.

TABLE 7.—*Acute Cholecystitis: Results of Cholecystographic Investigation*

Nonvisualization	*Nonvisualization with Opaque Stones*	*Impaired Visualization*	*Impaired Visualization with Calculi*	*Functioning Gallbladder with Stones*	*Not Done*	*Done 2 or More Weeks Prior to Admission*	*Total*
47	14	3	7	11	68	22	172

The empty gallbladder and fistula were not disturbed.

Table 6 correlates the time from the onset of symptoms to operation in those cases in which demonstrated acute pathologic conditions were demonstrable and those in which chronic microscopic pathologic change was observed. The cases classified as "chronic, microscopically" constitute mainly those in which the gallbladder was not removed until after acute illness of ninety-six hours (36 of 47 cases). It was suggested that the acute cellular infiltrate might subside during the time lapse.

Table 7 shows the results of cholecystographic study in cases of acute disease of the gallbladder. In 1950 cholecystography was done twice. As appreciation of the usefulness of this procedure developed, more patients were subjected to it. Of 82 cholecystograms taken, 47 showed nonvisualization; 14 showed nonvisualization with opaque stones; 3 showed impaired visualization; 7 showed impaired visualization with calculi, and 11 demonstrated a functioning gallbladder with stones. If one excludes the 3 that showed impaired visualization only, positive proof of serious disease of the gallbladder was demonstrated in 79 of 82 cholecystograms. It is now my practice to examine roentgenographically a person with acute disease of the gallbladder whenever he is able to retain the dye. If nonvisualization occurs, the dye usually is seen in the right half of the colon; this is evidence that it was lost neither by vomiting nor by diarrhea and that it was not stored in the gallbladder (Fig. 2).

Some attention has been paid recently to the question whether single or multiple stones are more likely to produce acute inflammation. Of the 159 cases listed in Table 8, there were single stones in 37 (23.3 per cent), multiple stones in 98 (61.6 per cent) and multiple stones in the gallbladder with stones in the common duct in 24 cases (15.1 per cent). Three patients with acute disease confirmed microscopically, had no calculi.

Of 337 cases of chronic disease with calculi (Table 9) during the same period, there were single stones in 55 (16.3 per cent), multiple stones in 247 (73.3 per cent) and multiple gallbladder stones with common duct stones in 35 (10.4 per cent).

The incidence of single stones in association with acute cholecystitis is one and one-half times that observed in cases of chronic disease. More significantly, the incidence of common duct stones associated with acute disease is one and one-half times that of the same stones in association with chronic disease, and this makes it imperative that the common duct be investigated. No common duct stones were

TABLE 8.—*Acute Cholecystitis: Number of Stones Present*

Single	*Multiple*	*Multiple, with Common Duct Stones*	*Total Cholecystectomies*
37 (23.3%)	98 (61.6%)	24 (15.1%)	159

TABLE 9.—*Chronic Cholecystitis: Number of Stones*

Single	*Multiple*	*Multiple, with Common Duct Stones*	*Total Cholecystectomies*
55 (16.3%)	247 (73.3%)	35 (10.4%)	337

present in any patient who had a solitary calculus of the gallbladder.

Cholecystectomy was done in 159 of 162 operative cases (Table 10). In 1 exception cholecystostomy was done for acute calculous cholecystitis engrafted upon carcinoma of the gallbladder invading the liver. Cholecystostomy and partial cholecystectomy were done in 1 case of acute gangrenous cholecystitis with solitary stone, in which the neck of the gallbladder was frozen to the duodenum; this was done because the patient had serious hypertensive heart disease with orthopnea. In the third exception, jejunotomy alone was done for intestinal obstruction due to three large gallbladder stones that had perforated a spontaneous cholecystoduodenal fistula during the course of acute cholecystitis in a patient who had entered the hospital at a late date. The common duct was explored in 44 cases (27.7 per cent). Operative cholangiographic exploration was done in 21 of these. In 21 operative cholangiographic examination alone was done.

TABLE 10.—*Acute Cholecystitis: Operative Procedure*

Procedure			*No. of Operations*	*Percentage*
Cholecystectomy, total			159	98.2
Cholecystectomy alone	94	(58.0%)		
with Exploration of common duct	23	(14.2%)		
with Exploration of common duct and operative cholangiogram	21	(13.0%)		
with operative cholangiogram	21	(13.0%)		
Partial cholecystectomy with cholecystostomy			1	0.6
Cholecystostomy			1	0.6
Jejunotomy with extraction of calculi			1	0.6
			162	100.0

TABLE 11.—*Acute Cholecystitis: Interval Between Operation and Discharge*

No. of Days	*No. of Patients*
1	0
2	0
3	1
4	20
5	18
6	41
7	22
8	29
9	10
10	5
11	3
12	5
13	2
14	2
More than 14	4
Not operated on	10
	172

In a total of 65 cases (40.3 per cent), therefore, of the entire group of 159 cholecystectomies the status of the common duct was investigated. It is frequently amazing to see the ease with which exploration of the common duct can be done when the gallbladder mass has been decompressed or removed. Ten patients were not operated upon. In most instances, trocar puncture and aspiration of the gallbladder were done to facilitate its removal. An attempt was made to remove the gallbladder from neck to fundus when possible. If this was impossible, or if it was difficult to visualize Calot's triangle (consisting of the cystic duct, the cystic artery and the common duct), the gallbladder was removed from the fundus to the neck. When the latter method was elected, it was important usually to ligate the cystic artery before ligation of the cystic duct.

The gallbladder should be opened in the surgeon's presence, preferably by someone not scrubbed at the table. Useful information may be gained. A large solitary stone or multiple large stones, with a narrow or tortuous cystic duct, would permit the surgeon to be less concerned about common duct stones. Small stones or a relatively wide or short straight cystic duct should alert the surgeon to the possibility of common duct calculi. The presence of unsuspected carcinoma can be determined.

It is foolhardy to persist in attempting cholecystectomy if the surgeon's experience is small, if the pathologic alterations and the technical hazards are great and if the help and anesthesia are poor. The inexperienced surgeon needs the best assistance, and the experienced surgeon deserves it. Cholecystostomy has a place, but not a prominent one, as surgeons treat more of these problems.

Table 11 shows the time that elapsed from operation to discharge (average in days). There were 2 deaths, a mortality rate of 1.2 per cent. One patient, a man aged 66, had acute coronary thrombosis and died on the fourth day after the operation. In the other, a woman aged 64, pulmonary embolism developed, and she died on the third day after the operation. The majority of the patients were discharged after six to eight days. Forty-one were discharged in six days; 29 in eight days; 22 in seven days; 20 in four days, and 18 in five days.

COMMENT

A review of the literature reveals three approaches to the care of acute cholecystitis. Glenn[5] has been a leading champion of early operation. He reported 697 operations for acute cholecystitis with a mortality rate of 2.7 per cent; 428 of the patients were under 50 years of age, with a mortality rate of 1.4 per cent; 268 were over 50, with a mortality rate of 4.9 per cent. Cholecystectomy was performed in 88 per cent of the entire group and cholecystostomy in 12 per cent. Rot and Priestly[6] reported 127 cases of acute cholecystitis with a 31.4 per cent incidence of cholecystostomy and a mortality rate of 6.2 per cent after early operation. Smith[7] reported 332 operations for acute cholecystitis, with 223 cholecystectomies and a mortality rate of 3.5 per cent, and 109 cholecystostomies with a mortality rate of 11.3 per cent. Strohle, Cole and Diffenbaugh[8] performed cholecystostomy in 22.9 per cent of their cases. Martin[9] reported 166 cases in which cholecystectomies were done in all but 2. There were 2 deaths in his series, a mortality rate of 1.29 per cent. He cited a series of Eliason[10] (1944), who collected 135 cases with cholecystostomy done in 68 per cent and cholecystectomy in 32 per cent. Buxton, Ray and Coller[11] reviewed 109 cases. Cholecystectomy was done in 43, with 4 deaths; cholecystectomy with common duct exploration in 9, with 1 death, and cholecystostomy in 3 cases with 1 death. Medical management was chosen in 3 cases, with no deaths.

Morse, Krynski and Wright[12] have expressed the opinion that acute cholecystitis demands the earliest possible attention, because of the mortality and morbidity associated with acute perforation of the gallbladder. In Becker's opinion,[13] the question of early versus delayed operation for acute cholecystitis would be less controversial if there were agreement as to the frequency of perforation. He noted that in his operative group the mortality rate was three times as high among patients with perforation as among those in whom the gallbladder wall was intact.

A second group, and a probably diminishing one, maintains that surgical intervention is rarely necessary in cases of acute inflammation of the gallbladder. Behrend[14] spoke for this group in the middle 1930's, when he said that little if any surgical treatment is necessary during the acute phase of this disease and that hospitalization, starvation, suction when needed, parenteral feedings and general supportive measures will relieve acute cholecystitis in most cases.

A third group, which, in the words of Mustard and Custer,[15] "lean toward the conservative side and interval surgery, believe that each case should be treated and judged individually on its own particular findings . . . and agree thoroughly . . . that the acute symptoms in the vast majority of cases will subside with immediate hospitalization and energetic conservative treatment." They report 211 cases of acute cholecystitis observed over a ten-year period. Of the patients in this series, 172 were sent home clinically improved with instructions to return later for internal surgical therapy. Thirty-six patients were operated on (28 cholecystectomies and 8 cholecystostomies). No deaths occurred among patients less than 50 years of age, and the mortality in the age group above 50 was 2.3 per cent.

The data in this paper show that one may do a cholecystectomy in the presence of acute cholecystitis with a low mortality and certainly a much lower morbidity rate at any time during the course of the disease, without restriction as to time, if the process does not subside with conservative measures. The critical period of four to twelve days is a fallacious concept. The operation should not be a hurriedly emergent one. The advocates of delayed operation for this disease must certainly add the mortality and morbidity rates associated with elective operations on the gallbladder at a later date to their established mortality and morbidity statistics as related to therapy during the acute phase.

Barksdale and Johnston[16] tabulated the answers of 151 qualified surgeons to the question of the optimal time to operate in cases of acute cholecystitis. The advocates of early operation all agreed that dehydration and fluid imbalance must be corrected and that one should delay for a few hours until balance is restored. Most agreed that the period from four to twelve days is the one when most technical difficulties are encountered, and that one should wait until the attack subsides completely. Gross, Boggs, and Dunphy[17] reviewed 114 cases at the Peter Bent Brigham Hospital. According to them, in 43 cases operation was done from zero to four days' duration of the disease, with a percentage difficulty of 9.1 per cent, and 44 from five to twelve days, with a percentage difficulty of 36.2 per cent. This estimation of technical difficulty is not in accord with my personal experience or my experience in watching residents do this operation. From four to twelve days is not the time when difficulty is greatest; it reaches its peak after twelve to fourteen days, when fibrosis and vascular organization about the gallbladder and the hepatoduodenal ligament, as well as the surrounding structures, make the task of dissection infinitely greater.

ZUSAMMENFASSUNG

Es wird über eine Reihe von 172 aufeinanderfolgenden Fällen von akuter Gallenblasenentzündung berichtet, die von einem einzelnen Chirurgen innerhalb eines Zeitraumes von neun Jahren beobachtet wurden. Schmerzbefreiung, Verabfolgung von Flüssigkeiten und Anwendung von Absaugung ist notwendig. Der Wert der Cholecystographie und der Röntgenuntersuchung des Magendarmkanals, wo immer notwendig, der Leberfunktionsprüfungen und der Behandlung von Begleiterkrankungen in der Vorbereitung zum chirurgischen Eingriff wird beschrieben.

Um den besten Gemeinschaftsangriff auf die Erkrankung, nämlich in Form einer Gallenblasenresektion, vorzunehmen, wird der Zeitpunkt für die Operation ge-

wöhnlich nach einer, manchmal nach zwei und selten nach mehr Nächten gewählt.

Die Auffassung von einer kritischen Periode von vier bis zwölf Tagen wird als trügerisch angesehen. Die Operation sollte nach Sicherstellung der Diagnose und angemessener Vorbereitung des Kranken ohne Rücksicht auf die Zeitspanne ausgeführt werden, wenn die Beschwerden und Krankheitszeichen nicht zurückgehen. Unter 162 Kranken, die zur Operation kamen, wurde 159 Mal eine Gallenblasenresktion vorgenommen.

RÉSUMÉ

L'auteur présente une série personnelle de 172 cas consécutifs de cholécystite aiguë couvrant une période de 9 ans. La préparation se fait par le soulagement de la douleur, l'administration de liquides, et l'aspiration si nécessaire; étude cholécystographique, tests de la fonction hépatique, traitement d'une lésion concomitante éventuelle.

L'opération de choix, la cholécystectomie, est pratiquée en général au bout d'une nuit, quelquefois deux mais rarement plus.

L'idée d'une période critique de 4 à 12 jours est considérée comme fallacieuse. L'opération devrait être faite dès le moment où les symptômes et signes ne montrent aucune tendance à la régression, sans égard au temps écoulé, une fois le diagnostic établi de façon certaine et le malade étant préparé. Sur 162 cas opérés, l'auteur a pratiqué 159 cholécystectomies.

RIASSUNTO

Viene presentata una serie di 127 colecistiti acute osservate consecutivamente da un sol chirurgo in un periodo di 9 anni. Viene descritta la preparazione all'intervento, che consistette nella somministrazione di sedativi contro il dolore, somministrazione di liquidi, suzione gastrica quando necessaria, colecistografia, ricerche sull'apparato gastrointestinale, prove di funzione epatica e trattamento di eventuali malattie concomitanti.

Il momento migliore per operare è di solito dopo una notte, o due, o raramente più, dopo l'inizio dell'attacco, così da poter eseguire la terapia più adatta e cioè la colecistectomia.

L'autore considera erroneo il periodo critico di 2-12 giorni; l'intervento deve essere fatto ogni volta che i sintomi non tendono a regredire, indipendentemente dall'intervallo trascorso, e quado la diagnosi sia sicura e la preparazione adequata. La colecistectomia fu eseguita in 159 su 162 casi operati.

RESUMEN

Se presenta una serie de 172 casos consecutivos de colecistitis observados por un cirujano en un período de 9 años.

Se necesita como preparación el alivio del dolor, la fluidoterapia y la aspiración; También se describe el valor del estudio colecistográfico, la exploración gastrointestinal, la valoración de las pruebas hepáticas y la atención debida a las enfermedades concomitantes.

Se considera como falaz el concepto de período crítico de cuatro a doce días. La operación debe ser hecha, siempre que los signos y síntomas no cedan, independientemente del tiempo transcurrido, una vez que se haya diagnosticado exactamente y preparado adecuadamente.

En 159 casos de los 162 sometidos a operación se practicó una colecistectomía.

SUMARIO

Apresentou suas observações sobre 172 casos consecutives de colecistite aguda n'um periodo de 9 anos. No preparo usa sedativo para dor, hidratação e sucção; descreve o valor do estudo colecistografico e as provas de função hepatica alem do cuidado concomitante enfermidades no pre-operatorio.

Indica a operação usualmente após uma noite, ocasionalmente duas e mais raramente alem desse praso de tal forma que o melhor tratamento- a colecistectomia- seja feito.

Considera injustificado o conceito de um periodo crítico de 4 a 12 dias. Diz que a operação deve ser feita quando sintomas e sinais não tenham cedido, não importa qual o intervalo de tempo, depois que o diagnostico está firmado e quando o paciente está bem preparado. Praticou a colecistectomia em 159 casos de 162 doentes operados.

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Both during convalescence as well as in the course of prolonged illness, complications are often seen. Some of them occur naturally in the course of the disease, others are occasioned by some chance happening. Most doctors, like laymen, tend to ascribe some such event to some particular activity that has been indulged in. In the same way they may ascribe something as being due to an alteration in their habits of bathing or walking or a change of diet, whether this is the actual case or not. As a result of jumping to conclusions, the truth may escape them. One must know with exactitude what is the effect of a bath or of fatigue indulged in at the wrong time. Neither such actions, nor eating too much, nor eating the wrong food will always produce the same effects; it depends upon other factors as well. No one who is unacquainted with the specific effects of such action on the body in different circumstances can know the results which follow and consequently cannot make proper use of them as therapeutic measures.

—*Hippocrates*

bulbar palsy is most difficult. The passage of a feeding tube may be necessary, or it may even be that gastrostomy will have to be done. Tracheostomy often is required to provide means of reaspirating the material that has spilled into the trachea and bronchial tree and also of supplying a means of getting rid of the mucopurulent secretions that almost invariably form in such cases.

The problem of aspiration pneumonitis in the postoperative patient deserves special mention. Obviously, this complication is rare in patients who are properly prepared for elective surgical treatment. Such patients will be fasting and will have had their stomachs emptied if gastric retention is a problem. In an emergency state, such as that of a patient who has sustained an automobile accident or an abdominal catastrophe, a full stomach may pose a serious problem. All too often the possible consequences are forgotten or ignored, and the surgeon proceeds with anesthesia and operation, oblivious to the danger of aspiration of food and gastric secretions. If at all possible, the stomach should be emptied by tube. Moreover, intratracheal anesthesia may be very helpful in preventing the aspiration of gastric contents, especially if the intratracheal tube is equipped with an inflatable cuff.

Of the organic disturbances that affect the esophagus, the pharyngoesophageal diverticulum should be mentioned first. Although this pouch has its origin in the hypopharynx, it descends into the mediastinum as it increases in size, and it may compress either the esophagus or the trachea. Actually, it is surprising how relatively seldom patients with pharyngoesophageal diverticula have aspiration pneumonitis. In members of the older age groups, however, pneumonitis is not an uncommon complication.

Any type of esophageal obstruction may be responsible for the overflow of esophageal contents into the tracheobronchial tree. Strictures of the esophagus, carcinoma or foreign bodies lodged in the esophagus may cause the patient to aspirate esophageal contents into the lungs. Yet this rarely happens unless it is associated with alcoholism, unconsciousness or senility. Patients who have achalasia or cardiospasm, however, are particularly susceptible to the development of aspiration pneumonitis. The huge degree of retention and the lack of esophageal peristalsis probably are the factors of principal importance.

In a series of 601 patients with cardiospasm studied by my colleagues and me,[3] more than 10 per cent had pulmonary lesions or other manifestations of respiratory difficulty. Of the 63 patients (the 10 per cent), 46 had roentgenographic evidence of aspiration pneumonitis. In 26 of these 46 patients the process appeared to be unilateral, whereas in the remaining 20 bilateral involvement was noted. Of particular interest was the fact that the greatest extent of aspiration pneumonitis tended to occur in the midportions of the pulmonary fields, especially on the right side. A few of the patients who had had aspiration pneumonitis for a long time appeared to have pulmonary fibrosis.

In 5 instances the clinical and roentgenographic characteristics indicated a diagnosis of bronchiectasis. There was one pulmonary abscess in the series, and 1 patient had the typical symptoms of bronchial asthma, which promptly disappeared as soon as the esophageal obstruction had been relieved. Emphysema was an accompanying disorder in only 2 of the cases. Five of the patients had sputum containing acid-fast bacilli. In those instances in which cultures were made, the acid-fast bacilli proved to be chromogenic organisms not capable of producing tuberculosis. In a number of instances evidence of aspiration pneumonitis disappeared after adequate therapy for the achalasia. Evidence of residual fibrosis, however, was very likely to persist in the roentgenograms.

If patients with esophageal obstruction are in the habit of using mineral oil for constipation, pneumonitis is particularly likely to develop. Still, esophageal obstruction is not necessary for the development of a mineral oil granuloma on the basis of ingested mineral oil. Patients who have an incompetent cardia, possibly in association with hiatal hernia, are particularly susceptible to the development of lipoid pneumonitis. The type of granuloma observed in such patients is entirely similar to that observed in patients who have used oily nose drops. When an oil granuloma is unilateral there is often considerable diagnostic difficulty. In the roentgenogram the lesion may resemble bronchogenic carcinoma, and even at the time of thoracotomy the resemblance to carcinoma may be great; in fact, oil granuloma is the only inflammatory condition that produces the same puckered appearance on the surface of the pleura that is characteristic of malignant neoplasms.[4]

Fistulas between the esophagus and the trachea constitute a rather obvious source of difficulty. In the adult person these fistulas most commonly are associated with malignant disease, especially of the so-called party wall. A patient who has a tracheoesophageal fistula of malignant origin presents an extremely difficult therapeutic problem. Palliative gastrostomy often is the only measure possible. Occasionally a nonmalignant tracheoesophageal fistula is encountered. Such fistulas are caused most commonly by tuberculosis or some other inflammatory disease affecting the mediastinum, though occasionally by trauma. Likewise, the fistulas may be seen in association with benign esophageal strictures.

Tracheoesophageal fistula with atresia in a newborn infant should be recognized as soon as possible after the baby is born. In the most common type the distal segment of the esophagus communicates with the lower end of the trachea. Such patients invariably will have an air bubble in the stomach. Prompt surgical intervention is necessary in such cases if the infant is to be saved. The mortality rate is high when the anomaly is neglected, and the principal cause of death is aspiration pneumonia. For some unexplained reason, *atelectasis is particularly likely to develop* in the right upper lobe of such an infant. Preoperative and postoperative bronchoscopy sometimes is necessary. As a rule, it is easier to pass a small polyethylene catheter for purposes of suction than it is to introduce the bronchoscope itself. In many instances a postoperative anastomotic stricture may develop; if it does, it will require dilation.

For patients with pulmonary complications secondary to esophageal disease, tracheostomy and gastrostomy sometimes are important and life-saving procedures. Certainly, when a patient is unable to swallow because of unconsciousness, weakness and paralysis of the throat muscles, tracheostomy should be done without delay. Not only will respiration be facilitated thereby, but secretions can be readily aspirated from the bronchial tree. Moreover, an opportunity for treatment of the respiratory tract with adequate humidification and therapeutic aerosol mists will be afforded by tracheostomy. In the meantime gastrostomy can be done, or a feeding tube can be inserted into the stomach through the mouth or nose. It is important that the tracheostomy tube be kept in place until it is no longer needed. Too often these tubes are removed while there is still danger of aspiration pneumonitis. Once tracheostomy or gastrostomy has been done, there is no harm in keeping the opening patent until the emergency has passed.

ZUSAMMENFASSUNG

Angesichts der engen Beziehung zwischen der Speiseroehre und den Atmungsorganen ist es nicht verwunderlich, dass Stoerungen des Schluckaktes ernste Wirkungen auf die Bronchen und die Lungen ausueben. Seltener sind Stoerungen der Speiseroehre durch Erkrankungen des Atmungsapparates hervorgerufen. Von groesster Bedeutung sind Stoerungen, die fuer ein "Versagen des Oeffnens" entweder des oberen oder des unteren Sphinkters der Speiseroehre verantwortlich sind. Erkrankungen des Zentralnervensystems, Syndrome von Muskelschwaeche und Verlust des Entspannungsvermoegens der Kardia sind die hauptsaechlichen Ursachen fuer Aspirationspneumonitis. Intubation und Gastrostomie sind oft erforderlich, wenn die Funktion des Sphinkters am Ringknorpel des Kehlkopfes gestoert ist, und in solchen Faellen kann die Tracheostomie ein lebensrettender Eingriff sein. Die Beseitigung von Obstruktionen der Speiseroehre oder der Kardia ist zur Behandlung und zur Verhuetung von Lungenkomplikationen wesentlich.

RÉSUMÉ

En raison des relations étroites, entre l'oesophage et le système respiratoire, les troubles de la déglutition peuvent avoir des conséquences graves sur les bronches et les poumons. Plus rarement, les troubles oesophagiens sont causés par des affections du système respiratoire. Il faut accorder une grande importance aux troubles provoquant un défaut d'ouverture du sphincter supérieur ou inférieur de l'oesophage. Les troubles du système nerveux central, les syndromes d'atonie musculaire et l'achalasie du cardia sont les causes principales de la pneumonie de déglutition.

Il est souvent nécessaire de recourir à l'intubation et à la gastrostomie lors de troubles fonctionnels du sphincter cricoïdien, et la trachéotomie peut être salvatrice dans ces cas. La suppression de l'obstruction oesophagienne ou du cardia est essentielle dans le traitement et la prévention des complications pulmonaires.

RIASSUNTO

A causa degli stretti rapporti esistenti fra l'esofago e le vie respiratorie è facile che i disturbi della deglutizione producano gravi effetti sui bronchi e sui polmoni. Meno spesso disfunzioni esofagee sono causate da malattie polmonari. I più importanti sono quei disturbi dell'esofago che determinano l'incapacità "ad aprirsi" dello sfintere superiore o di quello inferiore: disordini del sistema nervoso centrale, sindromi da insufficienza muscolare, acalasia del cardias sono le principali cause della polmonite da aspirazione. L'intubazione e la gastrostomia sono spesso necessarie quando vi sono alterazioni dello sfintere cricoideo; la tracheotomia, in molti casi, è l'unico modo per salvare la vita dei pazienti. La rimozione dell'ostacolo nell'esofago o nel cardias è essenziale per la prevenzione e la cura delle complicazioni polmonari.

RESUMEN

Dada la estrecha relación anatómica entre el esófago y el tracto respiratorio es corriente la presencia de efectos en los bronquios y pulmones en los casos de alteraciones de la deglución. Menos frecuentement se producen disfalgias en los enfermos del aparato respiratorio. De la mayor importancia son aquellas alteraciones responsables de dificultades en la apertura del esfínter esofágico, alto o bajo. Las principales causas de la neumonia por aspiración son: alteraciones del sistema nervioso; debilidad muscular y achalasia del cardias. Cuando la función del esfínter clicoideo se altera puede ser necesaria la intubación o la gastrostomía y en algunos casos la traqueotomía puede salvar la vida. Es esencial aliviar la obstrucción del esóf-

ago o el cardias para el tratamiento y la profilaxis de las complicaciones pulmonares.

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Pela correlação intima entre esofago e arvore respiratoria se explicam os efeitos das disfagias sobre os bronquios e pulmões. Mais graves são as desordens responsaveis pela discinesia dos esfincteres superior e inferior do esofago. Os disturbios do sistema nervoso central, sindromes miastenicas e acalasia do cardia são as causas principais da pneumonia por aspiração. A intubação e a gastrostomia são as veses necessarias nos disturbios do esfincter cricoide e a traqueotomia pode salvar uma vida nessas condições. A remoção da obstrução do esofago ou do cardia é essencial na prevenção e tratamento das complicações pulmonares.

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The actual substance responsible for the allergic phenomena is unknown, but there is considerable evidence that it may be histamine—a substance which an English physician, H. H. Dale, has shown is present in large amounts in most of the tissues of the body. Histamine in extremely small doses, when injected, produces hives, a fall in blood-pressure, and shock-symptoms like those in allergy. It is a somewhat disquieting thought to recall that a man constantly carries in his tissues enough of this substance to kill a whole roomful of people were it released. The release of a certain amount of this substance in allergic shock may be the cause of the symptoms.

Unsatisfactory as the theories are, treatment, as already indicated, is usually satisfactory. As in so many other diseases, the physician must treat his patient when it is necessary and not wait until all the explanations of his disease have been made. Meanwhile the patient who is sensitive to foods and heat or light must be protected from them.

—*Major*

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—*Major*

Ruptured Diaphragmatic Hernia (Traumatic)

JAMES D. FRYFOGLE, M.D., ROBERT HORNBECK, M.D.,
DONALD MEHAN, M.D., AND WALTER STENBORG, M.D.
DETROIT, MICHIGAN

SINCE the "great American killer," the automobile, continues to extract its toll of human life, the medical profession must be prepared to recognize and treat the bizarre pathologic conditions presented by its victims. We wish to call attention to the multiple problems presented by the driver of an automobile in a head-on collision. It has been our opportunity to observe and treat 7 such patients, who suffered all or part of the following symptom complex: (1) a head injury; (2) a fractured spine; (3) a "crushed chest syndrome"; (4) a ruptured diaphragm with herniation of abdominal viscera into the pleural space; (5) a ruptured spleen or liver; (6) a ruptured kidney; (7) perforation of the bowel; (8) bilateral patellar injuries, and (9) bilateral sprain of the thumb.

The authors report their experience in the diagnosis and treatment of 7 patients who revealed the symptom complex of ruptured diaphragmatic hernia, with its attendant pathologic changes in other systems. The material is presented in such a way as to direct attention to the multiple problems in the sequence in which they were observed and treated.

Notations on the Aforementioned Patients.—All 7 patients were admitted to the hospital in advanced surgical shock. All presented the crushed chest syndrome, with diaphragmatic rupture and herniation of abdominal viscera into the pleural space. All of the patients had injuries of the head, patellae and thumbs. There were 2 patellar fractures. Four of the patients had ruptured spleens; in 3 the left kidney was ruptured, and 1 had a ruptured right kidney. Two of the patients had spinal cord injuries and 2 a perforated viscus. One had a ruptured liver. The patients' ages were 72, 68, 65, 58, 34, 28 and 23 respectively. The artist has graphically demonstrated the mechanical forces that produced this clinical picture (Fig. 1). Note that both legs are stiffly extended against the braking pedals until the moment of impact, when the knees are forced into the dashboard. As the greatest pressure is exerted by the braking foot, that is, the right, the patient's tense body is turned to the right. This may account for the majority of the traumas presenting in the left side of the chest, since its contact with the steering wheel is closer than that of the right. Both sides of the steering wheel are bent down from their central axis by the clasped hands; the thumbs, being innermost, receive the most pressure in an effort to protect the chest. The entire body, at the impact, is thrown upward and forward, the head hitting the windshield and whiplashing back.

Read at a meeting of the Southeastern Regional Division, United States Section, International College of Surgeons, Miami, January 1959.
Submitted for publication May 28, 1959.

The thoracic cage is crushed on the steering wheel shaft, the force being applied to the structures directly in line, that is, the lower part of the chest wall (usually on the left), the lung, the diaphragm, the spleen or liver, the stomach, the colon, the duodenum and the kidney. Thus one is able to demonstrate the mechanism by which this "civilized" catastrophe is brought about.

The Clinical Picture as Observed in the Emergency Room.—The patient is in shock, with head and knee injuries. The history (usually obtained from the ambulance driver or the police) indicates that he was the driver of the car. There may be no marks on the abdomen or the chest. In all cases in this series abdominal rigidity or spasm is present. There are absent breath sounds in the left side of the chest, and auscultation of the heart gives unsatisfactory results. This may be due to mediastinal shift. Deviation of the trachea was present in 4 cases in the series studied. There is usually cyanosis and evidence of oxygen lack; this may be due in part to bronchial obstruction. In 6 cases subcutaneous emphysema was present.

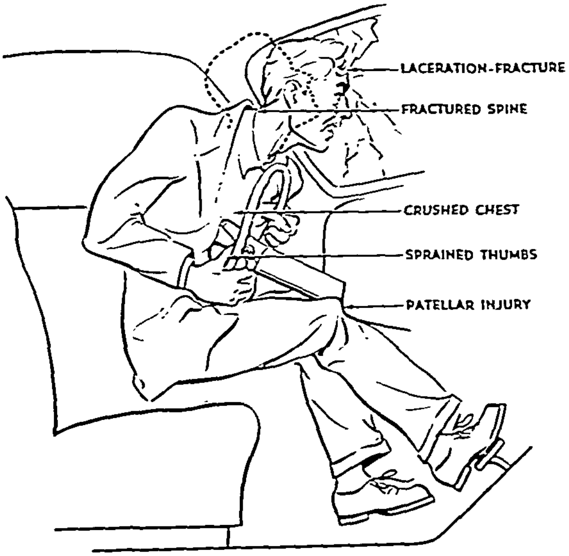

Fig. 1 (see text).

The Emergency Room Treatment.—The patient is placed on a mobile cart, either on his back or in a modified semi-Fowler position, care being exercised not to flex the neck. The neck is held in extension with sandbags. Nasal or mask oxygen is administered, and simple tracheal aspiration with a catheter is employed if there is an obstructed airway. Intravenous plasma is started, blood being taken for type and cross-matching from the original needle insertion. A nasal Levine tube is passed and suction applied. All patients are catheterized and urine specimens obtained. Gross blood is particularly looked for, but the specimen is sent for microscopic examination. Morphine sulfate is not given until the status of the head injury has been determined. This conservative management allows the patient's immediate condition to improve. Aspiration of the gastric contents almost always reveals a large amount of swallowed air, probably resulting from the respiratory dysfunction of the crushed chest. We have observed that elevating the patient's head increases the respiratory reserve and tends to quicken recovery from the shock-like state. It is to be remembered that the patient's respiratory reserve is dependent solely on a hemithorax, which makes mandatory the conservation of all respiratory mechanisms. The insertion and continuous suction of the gastric Levine tube aids this by reduction of gaseous abdominal pressure. Also, if there is perforation of the viscera herniating through the ruptured diaphragm, adding tension thorax to the already compressed lung parenchyma, it tends to embarrass further the respiratory difficulties; thus, deflation of the bowel accomplishes a dual purpose. The Levine tube also presents graphic evidence of the level of the stomach as compared to the diaphragm, so that on the original film study it may in itself be diagnostic (Fig. 2). Abdominal thoracentesis was attempted in the cases of the last 3 patients. In each case free blood was readily aspirated from a site just to the left of the umbilicus in the left upper abdominal quadrant. In only 2 cases did auscultation reveal bowel sounds in the left side of the thorax. We have found it advantageous in the initial examination of a patient to have him placed on a cart rather than on an examining table, so that at the earliest opportunity he may be transferred to the radiologic division, where roentgenograms of the skull, of the chest for ribs and of the chest for pleural space detail, a flat plate of the abdomen and a flat plate of both patellae may be done.

Definitive Treatment.—We disagree with the authors who maintain that complete correction of the shocklike state must be accomplished before surgical intervention can be advised. With the establishment of the diagnosis of a traumatic diaphragmatic hernia and herniation of abdominal viscera, it has been found expedient to take the patient to the operating room and anesthetize him with endotracheal gas-oxygen-ether anesthesia, maintaining as high an oxygen pressure as is possible. This provides aspiration of the airway and permits greater oxygenation. Surgically, we approach the problem through an ample abdominal incision and restore, as quickly as possible, the herniated viscera to their normal abdominal habitat. The restoration of normal respiratory function by re-expansion of the lung and maintenance of good oxygenation has been the greatest single factor in controlling the shocklike state of these patients. Also, through an abdominal incision, one is able to control or excise solid viscera that may be ruptured, such as the spleen or a portion of the liver. On the advice of the attending urologist, we have allowed all fractured kidneys to remain, as the bleeding was apparently retroperitoneal and controlled by its closed environment. All problems concerning the kidney have been

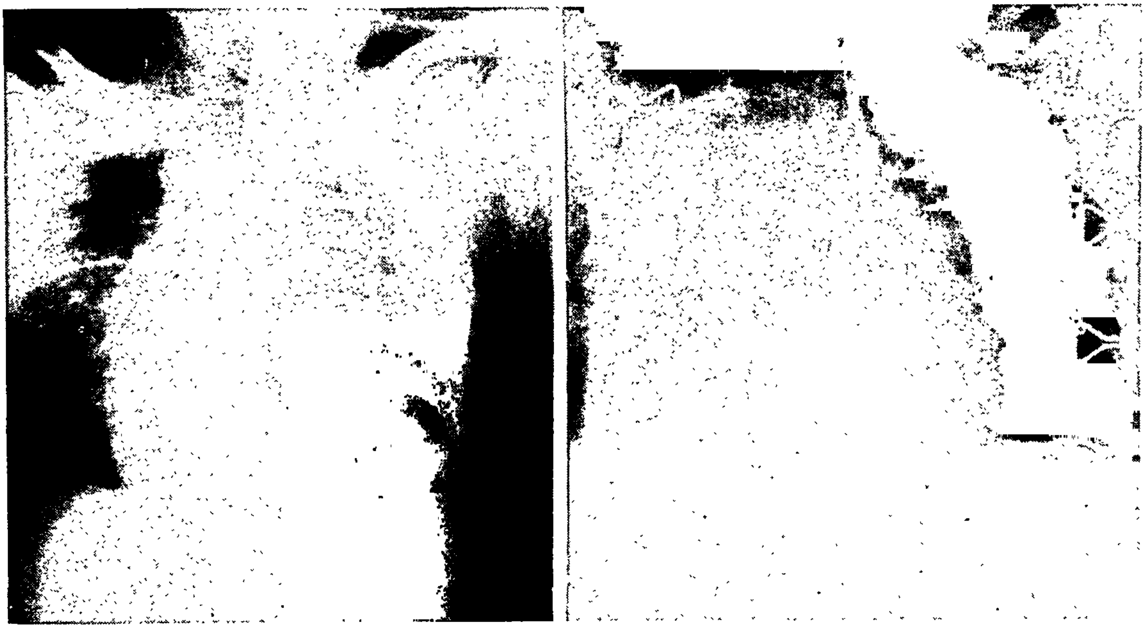

Fig. 2 (see text).

treated by conservative means, and all the patients have recovered without incident.

A review of Case 4 is here presented.

REPORT OF CASE

With the patient on his back and under gas-oxygen-ether intratracheal anesthesia, the abdomen was prepared and draped in the usual manner. A left rectus muscle-splitting incision was made from the costal margin to approximately 2 inches (5 cm.) below the umbilicus. The abdominal peritoneum revealed the presence of free blood. The abdominal cavity was aspirated. The herniated viscera occupied the entire left hemithorax. The examining finger was able to identify an edge of the torn diaphragmatic dome. Enlargement of this rupture allowed a certain amount of air to escape into the chest, creating a pneumothorax and thus releasing the negative pressure that held the abdominal viscera in place. These were removed from the thoracic cavity in an orderly manner, beginning with the large bowel, with removal of the small bowel, the herniated spleen, the stomach and the small bowel omentum. After their removal the anesthetist was able to inflate the lung. Through the enlarged aperture in the dome of the diaphragm and with the aid of a lighted retractor, the thoracic cage was visualized. There appeared to be no intrinsic damage to the parenchyma of the lung. The phrenic nerve was identified at its pericardial aspect and crushed with a curved forceps. The immobile diaphragm was now amenable to surgical repair. Through the previously prepared chest wall, a multifenestrated No. 24 intercostal catheter was inserted and attached to a water-sealed drainage apparatus. The stellate tear in the diaphragmatic dome was converted into a linear tear and its most outward angle grasped by a tenaculum. The denervated diaphragm was readily drawn into the wound and was closed with interrupted No. 0 silk sutures. The first row of sutures inverted the ragged edge into the abdominal cavity so that a pleura-to-pleura synthesis of its upper edge was obtained. A second row of sutures was placed on the abdominal peritoneal aspect, which inverted peritoneum to peritoneum, thus pleuralizing and peritonealizing both sides. Adequate function of the closed intercostal drainage tube allows free expansion of the lung, without the necessity of aspirating the pleural space from below. The herniated abdominal viscera had been packed in sponges soaked in warm saline solution. It was now possible to see gross hemorrhagic edema in the mesentery of all of the viscera that had herniated into the thoracic cage. This was undoubtedly due to the stretch placed upon them by the negative thoracic suction. There was a partial tear of the spleen, on its most posterior pole, that continued to bleed. The spleen was removed in the usual manner, with isolation and double ligation of its major vessels. The lateral ligament of the left lobe of the liver had been torn, but laceration of the liver could be detected. Exposure of the left renal area revealed a posterior retroperitoneal hemorrhage. The kidney could be palpated through this gross enlargement, and on the advice of the attending urologist it was not disturbed. The small bowel was inspected throughout its length. The stomach and particularly the posterior aspect of the duodenum were likewise inspected. No perforations were found. The indwelling Levine tube had greatly deflated the viscera after their removal from the thoracic cage. The abdominal cavity was aspirated in all of its recesses to remove all possible sources of blood. The peritoneum was grasped and closed with running chromic sutures. No drainage was left. The rectus fascia was closed in the usual manner with interrupted figure-of-eight silk sutures and the skin with silk. The patient's postoperative condition was good, considering the extensiveness of the procedure. During it the patient was given 1,500 cc. of whole fresh blood and a portion of a litre of dextrose in distilled water.

Postoperative Care.—All of the fundamental principles of general and thoracic surgical care must be exercised postoperatively. The pleural spaces are followed by daily film studies for the first three days, until complete expansion and aeration of the lung are accomplished, after which, under a closed technic, the intercostal tube may be removed. Particular attention must be given to the lobe of the left lung, in that the diaphragm has been made inactive surgically in order to facilitate its closure, and, since its previous compression makes it liable to the development of atelectasis and pneumonitis, vigorous attempts are made to prevent atelectasis. A postoperative bronchoscopic procedure is done on the operating table after the original operation, to insure a clear airway upon return to the ward. Nasal oxygen (6 L.) is given to all patients postoperatively until stabilization of the cardiovascular system is obtained. The 2 patients with spinal cord injuries were placed in correction with tongs and on a Stryker frame. This facilitated their turning and surgical nursing management. Continuous gastric suction was maintained, as the most frequent and most distressing operative complication was the adynamic ileus present in 4 of the 7 patients. Suction was maintained for varying periods, the longest being six days. A Foley catheter was left in place, with bottle drainage by the bedside. As a patient in such a case cannot be permitted early ambulation, owing to the multiplicity of the injuries and the need for drainage of the intestinal tract, the pleural space and bladder, an overhead bar greatly expedites mobility in bed, and the patient is encouraged in its use. Records of intake and output, electrolytic studies and, of course, adequate parenteral fluid maintenance are necessary. The essential needs in the care of these complex problems are an alert emergency room staff and unified specialist teams, incorporating anesthesiology as well as general, thoracic, neurologic, orthopedic and urologic surgery. Their immediate availability, plus the cooperation of special service departments (roentgen, laboratory and blood bank) will save the lives of seriously injured patients who were formerly considered too poor as surgical risks to treat other than expectantly.

A monograph on the varied nursing measures and technics essential to the postoperative survival of these patients would be in order. The survival and well-being of 5 of the 7 patients in this series of cases is a credit to the efforts of the general and special nursing staff members.

COMMENT

Since the incidence of major trauma resulting from automobile accidents appears to be increasing, it would be well for the general hospital, which must provide care for these victims of the highway, to formulate a routine of emergency room diagnosis and therapy. Experience with these 7 cases of serious trauma has alerted the staff at this hospital to the very real possibility of survival if conscious and complete efforts at prompt treatment are carried out. Control of hemorrhage, repair of perforations and restoration of respiratory physiologic conditions by whatever surgical measures are necessary are the immediate therapeutic aims. The decision to intervene surgically in the case of a patient who has suffered maximal stress and appears to be an extremely poor surgical risk is a difficult one. In our opinion, however, the 5 living patients survived mainly because such a decision was made. The usual conservative measures fail to rectify the multiple physiologic imbalances brought about by the many systems involved.

RIASSUNTO

L'autore riferisce la sua personale esperienza nella diagnosi e nella cura di 7 malati che presentavano sintomi di ernia diaframmatica rotta. Il materiale è stato presentato in modo da mettere in evidenza la successione dei problemi che si pongono e il modo per risolverli.

ZUSAMMENFASSUNG

Der Verfasser berichtet ueber seine Erfahrungen in der Diagnose und Behandlung von sieben Kranken, die dem Symp-

tomenkomplex einer durchgebrochenen Zwerchfellhernie mit begleitenden pathologischen Veraenderungen in anderen Systemen aufwiesen. Um auf die vielfaeltigen Probleme in der Reihenfolge, in der sie zur Beobachtung und zur Behandlung kamen, aufmerksam zu machen, wird das Material in Skizzenform dargestellt.

RÉSUMÉ

Les auteurs décrivent leur expérience du diagnostic et du traitement de 7 cas présentant le complexe symptomatique d'une rupture de hernie diaphragmatique avec ses modifications pathologiques concomitantes dans d'autres organes. Ils analysent les données dont ils disposent en faisant ressortir dans leur ordre chronologique les multiples problèmes rencontrés et la façon dont ils ont été résolus.

SUMARIO

Expõe sua experiencia em 7 pacientes que revelaram sintomas complexos de hernia diafragmatica rôta com as modificações patologicas proprias. Apresenta a casuistica de forma a permitir sejam entendidos os complexos problemas observados durante a sequencia em que foram observados e tratados.

RESUMEN

El autor da cuenta de su experiencia en el diagnóstico y tratamiento de 7 enfermos que presentaron el complejo sintomático de rotura de hernia diafragmático con las correspondientes alteraciones patológicas, en todos los sistemas. El material se expone en forma esquemática, poniendo de relieve los múltiples problemas en el orden en que fueron observados y tratados.

While the British Navy was suffering from the ravages of scurvy, the Japanese were having much trouble in their navy with a curious disease which they called beriberi. No one seemed to know the cause of this curious malady, and little was known about its treatment. The only definite information anyone had about it was that the disease had a venerable family history which could be followed back untold ages into China, where it had been present since history began. It had also been found in India, Java, the Malay States, and other parts of the Orient. This history gave no particular comfort to the sufferers from beriberi, but it supplied the doctors who were studying it with an interesting bit of information—that the disease was prevalent in parts of the world where large quantities of rice were consumed.

—*Major*

Compazine

Its Routine Preoperative and Postoperative Value

TIMOTHY A. LAMPHIER, M.D., F.A.C.S., D.A.B.S., F.I.C.S., F.R.S.M. (Eng.)*

BOSTON, MASSACHUSETTS

THIS study illustrates the value of Prochlorperazine in both preoperative and postoperative treatment. The usual mild transitory side effects of Compazine, such as mental depression, drowsiness, dizziness, dry mouth, slight cutaneous reactions and agranulocytosis, were not observed in this group of patients—possibly because they totaled only 45. The drug was extremely effective in relieving preoperative and postoperative nausea and vomiting.

All patients studied were given only the intramuscular form of Compazine. This eliminated completely the possibility of drug-induced nausea and vomiting unless narcotics, analgesics or sedatives had to be administered in conjunction with Compazine. It is known that "in laboratory studies Prochlorperazine was found to have up to six times the potency of Chlorpromazine in blocking apomorphine-induced emesis in dogs. . . . It apparently acts directly on the vomiting center as other Phenothiazine compounds have been shown to do."

The value of Prochlorperazine as a preoperative and postoperative agent is well demonstrated. Its routine use by the author has reduced or supplanted the usual preoperative medication and eliminated postoperative medication after the first postoperative day. Its antiemetic effect has been well demonstrated.

It is my impression that Compazine depresses the medullary vomiting center in the floor of the fourth ventricle, and it certainly blocks the emetic stimuli at the chemoreceptor trigger zone.

As Moyer has so aptly pointed out, nausea and vomiting may produce more distress than the primary disease; they serve no useful purpose, and frequently the cause is either unknown or, when known, impossible to eliminate. The patterned response of vomiting is initiated by tonic, excitatory and inhibitory nervous and metabolic stimuli.

Even with present-day high standards of anesthesia, postoperative vomiting will occur and will result in such complications as wound disruption, aspiration of vomitus or electrolyte imbalance. Sensitivity to such drugs as morphine and Demerol will produce emesis. Furthermore, morphine derivatives lower the vestibular threshold, increase the excitability of the medullary vomiting center and make it more susceptible to subthreshold stimuli.[1]

Weiss and others[2] have mentioned the following advantages of Chlorpromazine:

1. Less apprehension in the patient.
2. A decrease in the dose of anesthetic required.
3. The prevention of shock.
4. A decrease in the need for postoperative sedatives and analgesics.

Its analagous and less toxic counterpart, Prochlorperazine, accomplishes the same

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*With the technical assistance of Nathan Blumsack and Patricia King, B.S., R.N.

Prochlorperazine (Compazine) was kindly supplied by Smith, Kline, and French Laboratories, Philadelphia, for this study.

Submitted for publication Jan. 19, 1959.

purpose and yet is much more effective as an antiemetic.

The ideal preoperative and postoperative drug should not depress circulation or respiration as do narcotics and barbiturates. Compazine seems to meet this requirement. It allows for early oral feeding and ambulation.

The specific ability of Compazine to reduce psychic stress is well known and well established. The tranquilized patient requires less anesthesia, is more cooperative, less tense, less agitated, less apprehensive and less irritable and does not become hysterical. Psychosomatic symptoms are controlled. Because of the synergism between Compazine and sedatives, close attention must be paid to the requirements of dosage.

In this series of patients, there was no evidence of addiction. There was no obvious depression of respiration, cough reflex or peristalsis. The patients were no longer preoccupied with somatic complaints, and they did not brood.

Prior to the administration of Compazine, complete blood counts and urinalyses were done.

In this group of patients, nausea and vomiting disappeared thirty to forty minutes after the drug was administered, and usually these symptoms did not recur. The patients also became more amenable to suggestion once vomiting was controlled.

The following list of 20 cases describes summarily the results in those who were given Compazine preoperatively and postoperatively.

REPORT OF CASES

CASE 1.—E. B., a man aged 46, had a left inguinal hernia. He was unduly anxious and concerned and was apprehensive with regard to surgical intervention. After preoperative administration of 20 mg. (2 cc.) of Compazine intramuscularly, the patient responded favorably to medication with an optimum duration of eight hours.

Postoperatively the patient was nauseated and suffered from pain. Beginning twelve hours after the operation he was given 1 cc. of Compazine every four hours. After the third dose the nausea disappeared. The medication was continued for forty-eight hours. The response was excellent. The medication was discontinued.

CASE 2.—M. M., a woman aged 70, underwent hysterectomy. Medication was given preoperatively, and no further medication was required.

Postoperatively the patient was nauseated and apprehensive as to the results of pathologic examination, expressing concern and anxiety. She was given 1 cc. of Compazine every four hours. After the third dose she responded well and the nausea disappeared completely, with improvement in the mental attitude.

CASE 3.—H. P., a man aged 73, underwent bilateral herniorraphy. Medication (1. cc.) was given preoperatively every three hours for twelve hours. The patient was composed, and no primary sedation was necessary.

Postoperatively 1 cc. of Compazine was given every five hours. Nausea was absent, and an excellent mental attitude was noted. After the first twenty-four hours of administration of 1 cc. of Compazine every five hours, narcotic medication was decreased and, after thirty-six hours, finally eliminated.

CASE 4.—D. C., a woman aged 38, underwent hysterectomy. She was restless and anxious, deeply concerned and mentally upset. After medication (1 cc.) her condition improved considerably. A second injection was given, after which the patient was fairly relaxed.

Postoperatively she was given 1 cc., and this was repeated in six hours, with good effects. The patient seemed completely relieved. Medication was withheld during the next eight hours, and the primary anxiety and restlessness returned. Medication was continued, every six hours; the patient responded well, and at this dosage level was completely relaxed. A decrease was noted in the amount of sedation necessary to eliminate and relieve pain.

CASE 5.—M. W., a woman aged 46, underwent cholecystectomy. She was excessively upset and anxious, practically in hysteria. She was given 2 cc. of Compazine intramuscularly. Two hours later her condition was improved, but not as much as in some other cases. No further Compazine was given preoperatively. Routine preoperative medication was administered.

Postoperatively 1 cc. was given intramuscularly, with fair results. The dose was repeated in four hours, again with fair results. It was continued, 1 cc. every four hours. The patient had improved considerably after the third dose.

CASE 6.—J. C., a man aged 62, underwent herniorraphy. Preoperatively he was nervous and apprehensive. One cc. of Compazine was given intramuscularly, and improvement was noted within twenty-four hours.

Postoperatively 1 cc. was given; the duration of effectiveness was four hours, and the patient became restless if the drug was withheld. Nausea was absent with continued doses at four-hour intervals. The patient's mental condition was excellent. There was no restlessness, and he rested well.

CASE 7.—J. C., a man aged 50, underwent radical mastectomy. Injections were given preoperatively.

Postoperatively 1 cc. was given every four hours. Nausea was absent. The patient was in good mental condition and spent a restful night. A decrease was noted in the amount of narcotics needed for control of pain.

CASE 8.—V. D., a woman aged 47, underwent vein ligation. Preoperatively she was nervous, anxious and nauseated. She was given 1 cc. of Compazine every four hours for two doses, with good results.

Postoperatively 1 cc. was administered every four hours. The patient had no nausea and was in excellent mental condition, with excellent relaxation.

CASE 9.—M. K., a woman aged 45, underwent coccygectomy. Preoperatively the patient was extremely nervous and anxious. One cc. of Compazine was given upon her admission to the hospital.

Postoperatively 1 cc. was given at intervals of four to six hours. The change in the patient was marked, and the entire complex improved. The patient was given 1 cc. every six hours for five days, and showed excellent results.

CASE 10.—F. S., a woman aged 53, underwent cholecystectomy. Preoperatively 1 cc. of Compazine was given hypodermically, and the patient spent an untroubled preoperative night.

Postoperatively 1 cc. was given every five hours. The patient complained of pain. She was given 50 mg. of Demerol in conjunction with 1 cc. of Promazine. Relief from pain was effected. The combination worked very well.

CASE 11.—A. D. R., a man aged 58, underwent hemorrhoidectomy. Preoperatively the usual anxiety was present. Compazine, 1 cc., was given for two successive doses at one-hour intervals. The patient became comfortable and relaxed. He rested fairly well throughout the night.

Postoperatively nausea and vomiting occurred. The patient was given 1 cc., followed by a further 1 cc. two hours later. Vomiting and nausea disappeared. One cc. every five hours sustained the patient in a comfortable condition.

CASE 12.—A. H., a woman aged 39, underwent appendectomy. Preoperatively she was nervous and anxious. One cc. of Compazine was given on admission and 1 cc. four hours later.

Postoperatively the drug relieved nausea, eliminated nervousness and maintained the patient in a comfortable condition. The duration of effect was four to six hours. The patient was medicated in this manner for the next four days.

CASE 13.—R. S., a woman aged 52, underwent hysterectomy. Preoperatively she was nervous and anxious, complaining of severe headache. She was given 1 cc. of Compazine, and the dose was repeated in four hours. The headache disappeared, and the mental condition improved.

Postoperatively 1 cc. was given, with fair results. Repeated doses at four-hour intervals improved the patient, and she became completely relaxed.

CASE 14.—A. H., a woman aged 52, had cirrhosis of the liver. Preoperatively she showed extreme anxiety and concern. She was given 1 cc. of Compazine, repeated in four hours. Her condition improved.

Postoperatively she was given 1 cc. in repeated doses at three-hour intervals during the first day, thereafter extended to every six hours. She was kept in a comfortable status.

CASE 15.—J. K., a woman aged 21, underwent laparotomy. Preoperatively she was nervous and anxious. One cc. of Compazine was given, seeming to suffice for four hours, after which the dose was repeated.

Postoperatively the drug was very effective in doses of 1 cc. every four hours.

CASE 16.—M. S., a woman aged 38, underwent dilatation and curettage. Preoperatively she was concerned and anxious. One cc. of Compazine was given every three hours for two doses. The effect was good.

Postoperatively 1 cc. was given every three hours. The patient's mental condition was good. The drug practically eliminated the need for barbiturates or narcotics.

CASE 17.—M. K., a woman aged 45, underwent cholecystectomy. Preoperatively she was given 1 cc. of Compazine three times in twenty-four hours on the day before the operation with fair results.

Postoperatively 1 cc. was given three times a day but effected little relief. Relief became more pronounced when the dose was repeated every three hours.

CASE 18.—R. S., a woman aged 54, underwent hysterectomy. Preoperatively 1 cc. of Compazine was given every four hours, with little relief.

Postoperatively 1 cc. was given every four hours, but the patient still did not respond to the medication as well as the other patients; she had to be kept under narcotic medication.

CASE 19.—J. M., a man aged 57, underwent right herniorraphy. Preoperatively he was restless and anxious, but there was no nausea or vomiting.

Postoperatively medication was given every four hours for five days. This patient had a history of a manic-depressive psychosis. He was wildly excited on admission. Excellent control was obtained with Compazine.

CASE 20.—B. K., a woman aged 35, underwent dilatation and curettage, with suspension and appendectomy. The patient had many psychological disturbances and a long history of hospitalization with no diagnosis. Compazine was given every six hours, resulting in excellent control.*

Among the cases here described there were two obvious failures. The results were excellent in the remaining 43 cases (97%).

A tremendous advantage in the postoperative use of Compazine was that all other medications (narcotics and sedatives) could usually be discontinued after the *first* postoperative day (the day following the operation).

CONCLUSIONS

1. The most effective intramuscular dose of Prochlorperazine (Compazine) was found to be 1 cc. (10 mg.) every four hours.

2. The duration of effectiveness of the aforementioned dose was four to six hours. Sedatives were not necessary.

3. During Compazine medication the patients required small amounts of narcotics or analgesic drugs, much less than the usual requirement. They appeared relaxed and cooperative. The ataractic value of the drug was high.

4. For practical purposes, postoperative nausea and vomiting were practically eliminated when the patients were treated with Prochlorperazine.

5. No side effects were noted in this small group of patients, such as drowsiness, dizziness, jaundice, cutaneous reactions or blood dyscrasias.

6. "Compazine treated" patients did not require somnifacients for sleep.

7. Optimum results were noted after the patients had been given the drug for twenty-four hours.

8. Compazine greatly reduced both preoperative and postoperative tension, concern and anxiety, as well as postoperative nausea and vomiting. Postoperative amnesia was obtained.

9. There were no instances of hypotension.

10. Compazine provided a good muscle relaxant for spinal anesthesia, and aided also in bronchoscopic procedures. It also made for more efficient induction of anesthesia.

The following comments were made by Miss Patricia King, R.N., Nursing Supervisor:

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*Excellent results were obtained in 25 surgical patients in addition to those here described.

1. Intramuscular Compazine is more effective, or appears to be, when given preoperatively as well as postoperatively.
2. Intramuscular Compazine decreases the need for narcotic medication (the majority of patients on Compazine require narcotics only once after the operation).
3. It seems to enhance the effectiveness of narcotics.
4. Patients given Compazine were easier to care for than the others, because they were more relaxed and were thus more easily rehabilitated and became candidates for early ambulation.
5. The mental attitude of the patients was greatly improved.

RIASSUNTO

Viene dimostrata l'importanza della Proclorperazine somministrata nel periodo pre- e in quello post-operatorio. L'autore la usa abitualmente in luogo della medicazione preoperatoria tradizionale e ha abolito quella post-operatoria delle prime 24 ore. Il farmaco ha un'attività antiemetica ben dimostrata.

ZUSAMMENFASSUNG

Der Wert des Prochlorperazins als prae- und postoperatives Mittel wird klargestellt. Der Verfasser konnte durch routinemaessige Anwendung des Mittels die ueblichen praeoperativen Medikationen vermindern oder ersetzen und die postoperativen Arzneiverordnungen nach dem ersten Tage nach der Operation aufgeben. Die erbrechenverhindernde Wirkung des Mittels hat sich deutlich erwiesen.

RÉSUMÉ

La valeur de la Prochlorpérazine administrée pré- et post-opératoirement a été largement démontrée. Grâce à son application de routine l'auteur a pu diminuer ou supplanter les médications post-opératoires habituelles, et les supprimer dès le deuxième jour après l'opération. Ce produit est également précieux contre l'anémie.

RESUMEN

Se demuestra en este artículo el valor de la Proclorperacina en el pre y post-operatorio. Empleándolo como rutina, el autor ha reducido o suplantado la medicación preoperatoria habitual y ha eliminado la medicación postoperatoria pasado el primer día tras la operación. Ha sido suficientemente demostrado su valor antiemetico.

SUMARIO

O uso rotineiro de Proclorperazina pelo A; redusiu ou suplantou a medicação preoperatoria comum e eliminou a medicação pos-operatoria após o primeiro dia. O seu efeito anti-emético está bem demonstrado.

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2. Weiss, and others: Value of Chlorpromazine in Preoperative Medication, J.A.M.A. 161:812-815 (June 30) 1956.

* * *

> Don't touch the patient—state first what you see; cultivate your powers of observation.
>
> —*Osler*

Cardiovascular Surgery

Functional Portal Hypertension in Children

K. CZYZEWSKI, M.D., F.I.C.S.*
WROCLAW, POLAND

PORTAL hypertension in children has been described most frequently as the result of portal stenosis due to congenital or acquired obstacles. Cirrhosis of the liver leads to portal hypertension, but in few children.

I shall present 2 cases of distinct portal hypertension without any pathologic changes in the portal vein system, associated with discrete interstitial hepatitis verifiable by autopsy. This anatomic feature seems to be insufficient to cause portal hypertension. Additional functional factors, therefore, are to be searched for.

REPORT OF CASES

CASE 1.—B. A., a boy 10 years, with a history of disease of one year's duration, suddenly had profuse hematemeses. A large spleen was palpable. The child was treated with blood transfusions. For one year he remained in good health. Then the hematemeses recurred; they cleared up after splenectomy for some days only and finally led to death.

Autopsy revealed the following details: marked dilatation of the esophageal veins;

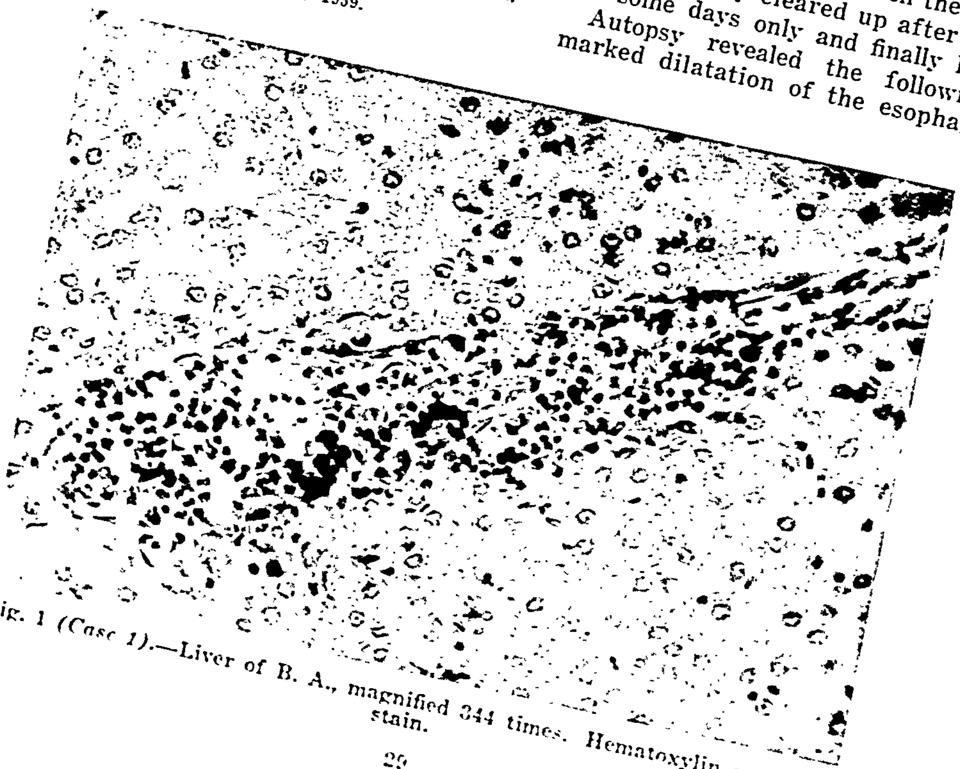

Fig. 1 (Case 1).—Liver of B. A., magnified 344 times. Hematoxylin and eosin stain.

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*Professor, Department of Surgery N. 1, Medical School, Wroclaw.

Submitted for publication Jan. 30, 1959.

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RESUMEN

Se demuestra en este artículo el valor de la Proclorperacina en el pre y post-operatorio. Empleándolo como rutina, el autor ha reducido o suplantado la medicación preoperatoria habitual y ha eliminado la medicación postoperatoria pasado el primer día tras la operación. Ha sido suficientemente demostrado su valor antiemetico.

SUMARIO

O uso rotineiro de Proclorperazina pelo A; redusiu ou suplantou a medicação preoperatoria comum e eliminou a medicação pos-operatoria após o primeiro dia. O seu efeito anti-emético está bem demonstrado.

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Don't touch the patient—state first what you see; cultivate your powers of observation.

—*Osler*

Functional Portal Hypertension in Children

K. CZYZEWSKI, M.D., F.I.C.S.*
WROCLAW, POLAND

PORTAL hypertension in children has been described most frequently as the result of portal stenosis due to congenital or acquired obstacles. Cirrhosis of the liver leads to portal hypertension, but in few children.

I shall present 2 cases of distinct portal hypertension without any pathologic changes in the portal vein system, associated with discrete interstitial hepatitis verifiable by autopsy. This anatomic feature seems to be insufficient to cause portal hypertension. Additional functional factors, therefore, are to be searched for.

REPORT OF CASES

CASE 1.—B. A., a boy 10 years, with a history of disease of one year's duration, suddenly had profuse hematemeses. A large spleen was palpable. The child was treated with blood transfusions. For one year he remained in good health. Then the hematemeses recurred; they cleared up after splenectomy for some days only and finally led to death.

Autopsy revealed the following details: marked dilatation of the esophageal veins;

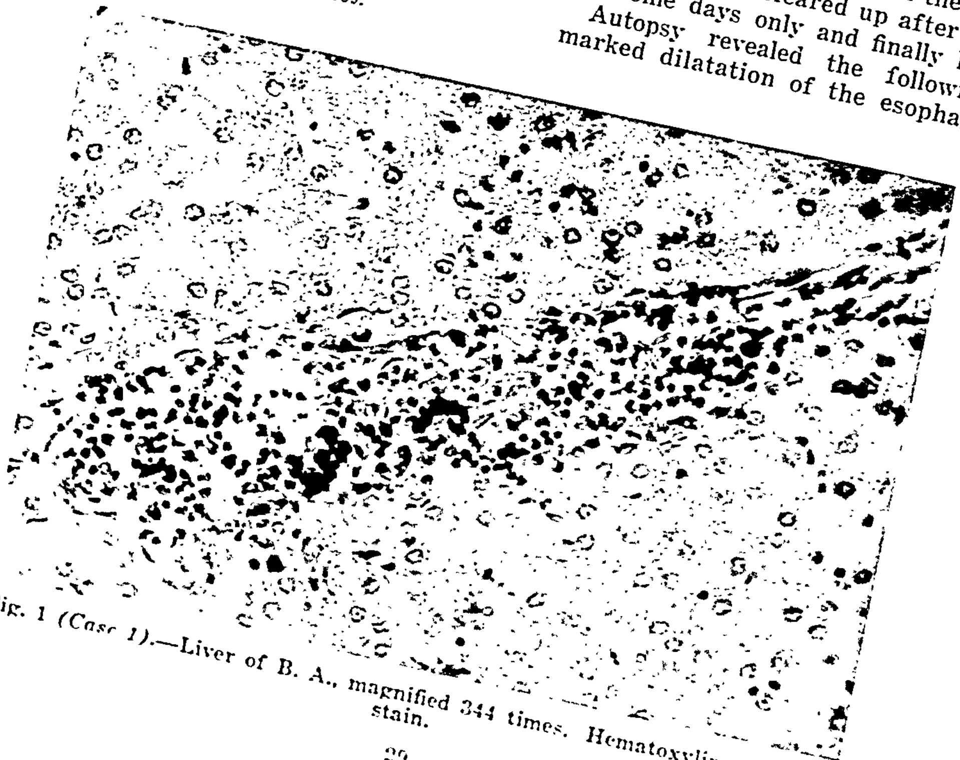

Fig. 1 (Case 1).—Liver of B. A., magnified 344 times. Hematoxylin and eosin stain.

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*Professor, Department of Surgery N. 1, Medical School, Wroclaw.

Submitted for publication Jan. 30, 1959.

The autopsies of 2 children who died of portal hypertension, without pathologic change in the portal system and without cirrhosis of the liver, are described. Only slight interstitial hepatitis was observed microscopically. The functional agents capable of producing an increase in the portal pressure are discussed.

abundant blood in the stomach and in the intestines; a normal portal vein, with its roots and its branches; a liver without any macroscopic pathologic change; and a gallbladder with slight traces of chronic inflammation.

Microscopically, the slices of liver sho
occasional scattered foci of infl
They were situated in Kiernan's s
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cells. There were many lymphocyt
plasma cells. The parenchym
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Figure 1 shows liver t
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CASE 2.—G. E., a girl ag
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I recall the common features of the 2 cases described: the secondary signs of portal hypertension (hematemeses, dilatation of the esophageal veins, splenomegaly); a normal portal vein; slight traces of interstitial inflammation, and chronic inflammation of the gallbladder. The foci of chronic inflammation showed no increase in the number of fibrils, no penetration of these into the parenchyma and no signs of degeneration in the parenchymal cells.

Many functional agents are able to increase pressure in the portal vein. Numerous experiments of this kind have been re-
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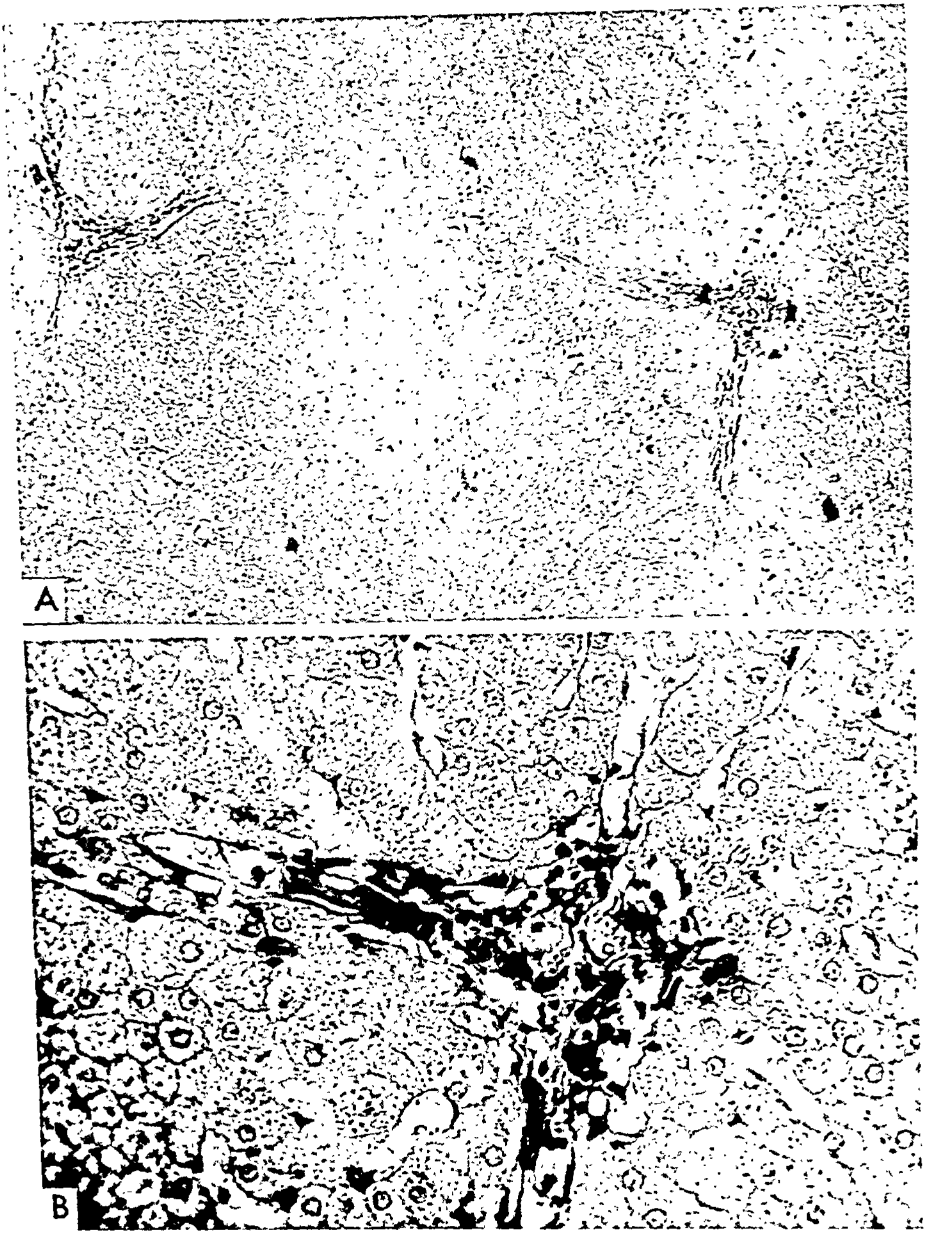


Fig. 2 (*Case 2*).—Liver of G. E., magnified 88 times (*A*) and 344 times (*B*). Hematoxylin and eosin stain.

ence of several pathologic conditions point to the adaptability of the hepatic blood circulation. The liver adjusts permanently its arterial as well as its venous pathways.

My collaborators examined the blood pressure of the portal vein in 6 dogs after administration of epinephrine, acetylcholin and histamine into the portal vein and the hepatic artery. They found the pressures in millimeters of water as shown in the accompanying table.

The excitation of nervous plexuses situated along the hepatic artery with the current exerted effects on the blood pressure

The autopsies of 2 children who died of portal hypertension, without pathologic change in the portal system and without cirrhosis of the liver, are described. Only slight interstitial hepatitis was observed microscopically. The functional agents capable of producing an increase in the portal pressure are discussed.

abundant blood in the stomach and in the intestines; a normal portal vein, with its roots and its branches; a liver without any macroscopic pathologic change; and a gallbladder with slight traces of chronic inflammation.

Microscopically, the slices of liver showed occasional scattered foci of inflammation. They were situated in Kiernan's spaces and composed of accumulations of mononuclear cells. There were many lymphocytes and few plasma cells. The parenchymal cells contained some drops of fat.

Figure 1 shows liver tissue stained with hematoxylin and eosin and magnified 344 times.

CASE 2.—G. E., a girl aged 13, was admitted to the hospital three years ago with a large spleen and hematemeses. Portal hypertension (380 mm. of water) was established, and laparotomy was performed. On account of the anatomic difficulties for a shunt operation, only a splenectomy was done. A long period of health followed, and many clinical examinations were done, none of which revealed any pathologic symptoms.

Suddenly new profuse hematemeses appeared. The child died a few days after undergoing operation according to Saegesser (a shunt between the hepatic artery and the portal vein).

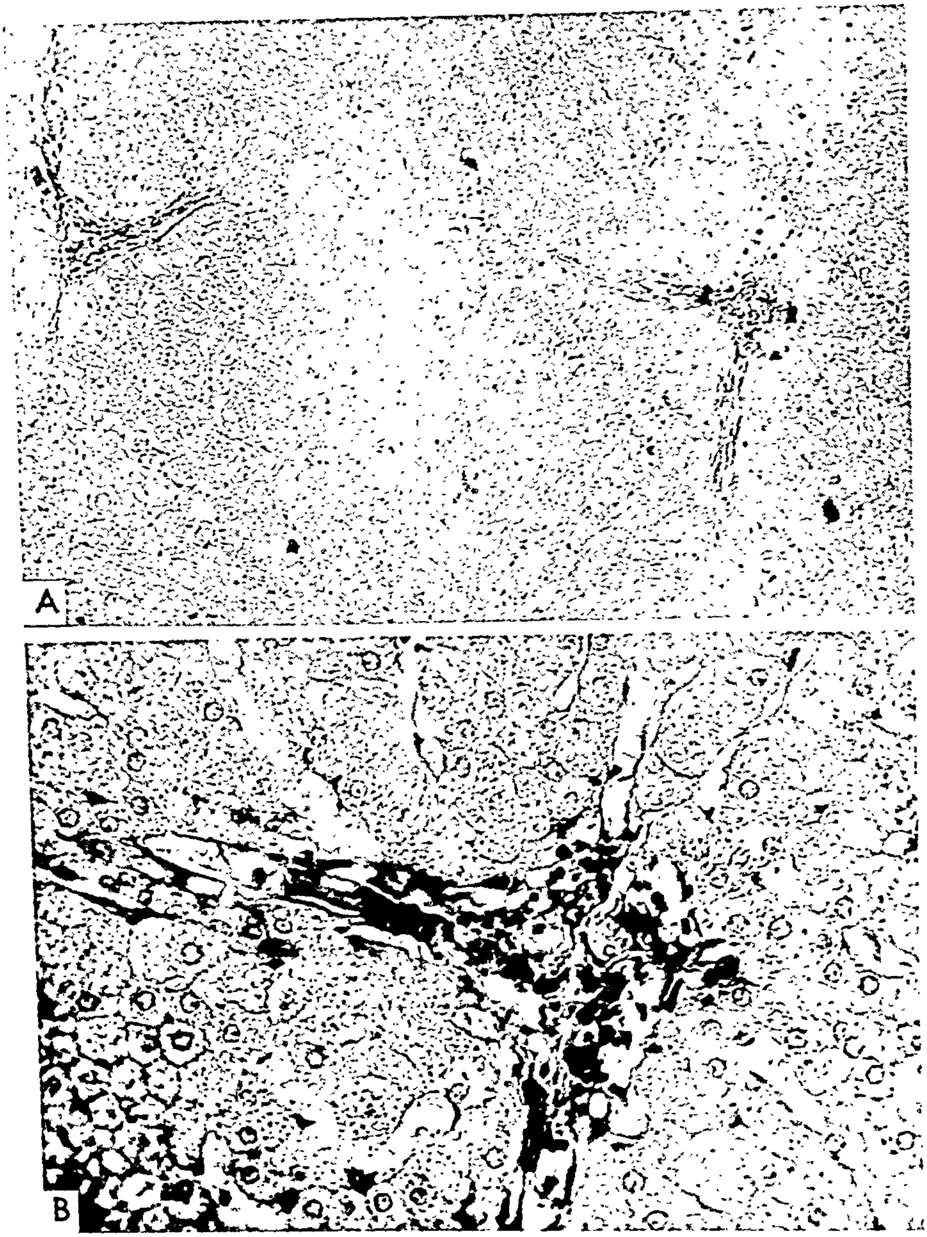
Autopsy revealed large varices of the lower esophagus, with two penetrating and bleeding ulcers; profuse blood in the stomach and in the intestines; a normal portal vein, with its roots and branches, and a liver macroscopically normal. The walls of the gallbladder showed traces of chronic inflammation. Microscopically, rare inflammatory foci, less pronounced and more widely dispersed than those noticed in Case 1, were observed. They were situated in the spaces of Kiernan and consisted of a few mononuclear lymphatic and fibroblastic cells. In the slices, stained after van Giesson, rare fibrils were demonstrated; their number did not exceed the normal count.

I recall the common features of the 2 cases described: the secondary signs of portal hypertension (hematemeses, dilatation of the esophageal veins, splenomegaly); a normal portal vein; slight traces of interstitial inflammation, and chronic inflammation of the gallbladder. The foci of chronic inflammation showed no increase in the number of fibrils, no penetration of these into the parenchyma and no signs of degeneration in the parenchymal cells.

Many functional agents are able to increase pressure in the portal vein. Numerous experiments of this kind have been reported in the literature. The structure of the liver and the organization of its blood flow provide sluices to mix the arterial blood of high pressure with the portal blood of low pressure[1] and to regulate the outflow from the liver through the hepatic veins.[2]

The mechanism directing the sluices has not been determined exactly. Angiographic study of the vessels of the liver;[3] measuring of the speed of blood flow,[4] and measuring of the blood pressure[5] in the pres-

Before, Pressures in Millimeters of Water	*Seconds After Pressures in Millimeters of Water*		*Minutes After Pressures in Millimeters of Water*	
120	50	135	5	125
125	50	130	5	125
110	*50*	*130*	*8*	*120*
120	50	135	6	120
130	50	150	2	130
120	50	145	6	120



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My collaborators examined the blood pressure of the portal vein in 6 dogs after administration of epinephrine, acetylocholin and histamine into the portal vein and the hepatic artery. They found the pressures in millimeters of water as shown in the accompanying table.

The excitation of nervous plexuses situated along the hepatic artery with the current exerted effects on the blood pressure of the portal vein similar to that of the aforementioned neurohormones.

It was impossible to identify, in the cases described either an agent acting on the interstitial tissue of the liver or the functional stimulus that increased the blood pressure in the portal venous system. Perhaps these are identical.

There are more details to be determined. What is the duration of the increased pressure due to functional factors? Are these periods of increase able to produce esophageal varices with necrotic ulcerations of the mucosa? Case 1 offers a guide for consideration. Distinctly dilated esophageal veins were observed, but no varices or bleeding exulcerations were present. Apparently the blood pervaded the epithelial layer of the esophageal or the gastric mucosa and perhaps the walls of the capillaries, as is known to occur in some cases of hemorrhagic gastritis. This mechanism seems to be consistent with functional portal hypertension in the early stages.

There are more clinical cases that can be grouped together in the chapter about functional portal hypertension. I have described 3 autoptic cases in *Lyon Chirurgical.*[6] Case 1, previously described, is mentioned there, as are 2 others in which the patients were adults, with a prolonged and eventful follow-up period. I have also observed some clinical cases of suspected portal hypertension of the type under consideration, but there is not sufficient evidence to justify their presentation.

RIASSUNTO

Vengono descritti i reperti necrosopici di 2 bambini morti per ipertensione portale ma senza lesioni del sistema portale e senza cirrosi epatica. Si osservarono soltanto, al microscopio, lievi lesioni interstiziali epatitiche. Viene discusso la possibilità che altri agenti funzionali possano produrre ipertensione portale.

SUMARIO

Descreve 2 autopsias feitas em crianças que morreram com hipertensão porta sem alterações no sistema porta e sem cirrose do figado. Foi observada apenas discreta hepatite intersticial. Discute os agentes capazes de produsir hipertensão porta.

ZUSAMMENFASSUNG

Es wird ueber die Obduktionsbefunde an zwei Kindern, die an Pfortaderhochdruck ohne krankhafte Veraenderungen im Pfortadersystem und ohne Leberzirrhose gestorben waren, berichtet. Mikroskopisch kam nur eine leichte interstitielle Hepatitis zur Beobachtung. Die funktionellen Faktoren, die zu einer Steigerung des Pfortaderdruckes fuehren koennen, werden eroertert.

RÉSUMÉ

L'auteur décrit l'autopsie de deux enfants décédés par suite d'hypertension porte, sans modificatîon pathologique du système porte el sans cirrhose hépatique. L'examen microscopique n'a montré qu'une faible hépatite interstitielle. Les agents fonctionnels pouvant produire une augmentation de la pression porte sont discutés.

RESUMEN

Se describe en este trabajo la autopsia de dos niños muertos de hipertensión portal, sin alteraciones patológicas en el sistema portal y sin cirrosis del hígado. Solamente pudo observarse una epatitis intersticial microscópicamente. Se discute sobre ajentes funcionales capaces de producir un aumento en la presión portal.

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Obstetric and Gynecologic Surgery

Dysontogenetic Tumor of the Cervix (Sarcoma Botryoides)

CHARLES F. KRAMER, M.D., A.I.C.S.
DOLTON, ILLINOIS

A case of dysontogenetic tumor of a urogenital sinus is reported. The patient was a two-year-old girl who was considered inoperable at first because of extensive local spread of the malignant lesion.

Despite radical operation and irradiation, the child died quickly of typical uremia, death occurring within ten months from the time she was first seen. The ineffectiveness of roentgen irradiation for this type of disease is demonstrated.

DYSONTOGENESIS is a term expressing accidents of development that may be followed by malformation or tumor.

It has been suggested by McFarland that the term "sarcoma botryoides" is misleading and should be dropped. Pfannenstiel was originally responsible for the term, which is derived from the Greek *botryos* (grape or grapelike).

In 1867 Weber described the first of a series of uncommon and peculiar tumors of the cervix uteri *(Virchos Arch. Path. Anat.* 39:216, 1867). In 1952 the literature was reviewed, and it was discovered that 95 cases had ben reported up to 1941 and 19 additional cases from 1941 to 1952. Up to the time of writing, fewer than 120 cases have been reported, including a single case of my own.

An article in the *Journal of Urology*, May 1952, by Mostofi and Moore, reported 10 cases of sarcoma of the dysontogenetic type, occurring in the bladder. The cases are reported to show that this type of sarcoma can occur in almost any part of the urogenital tract, though it is usually observed in the cervix, the uterine fundus and the vagina.

Histogenesis.—Wilm's modification of Cohnheim's theory of histogenesis has drawn the largest number of followers. Stated briefly, this theory is that not single cells but undifferentiated embryonal germ tissues are split off from the region behind the renal anlage and are carried toward the cloaca by the growth of the wolffian duct. As to the factors causing the growth of this tissue no theory is offered.

Incidence.—1. Age: Cases have been reported in which the tumor occurred as early as intrauterine life and as late as the age of 69. Tumors of the uterine corpus usually occur between the ages of 45 and 65. Tumors of vaginal origin tend to occur most often in infants and small children.

From the Thomsen Clinic, Dolton.
Submitted for publication May 24, 1959.

The statement that this tumor occurs chiefly under the age of 20 or after the menopause is incorrect. In one series of 22 cases, 12 patients were over 20 years and under 46 years of age. In another series, of 36 cases, reported by Glass, there were 4 patients under 10, 10 under 20 and 22 over 20. At the same time, Glass reported 58 cases of mixed mesodermal tumors of the body of the uterus, all of which were menopausal.

2. *Location:* The cervical type is most common in children, the corporeal type, in women past the menopause. This tumor may also be vaginal or vesical in origin. The tumors arising from the corpus must be differentiated from sarcomatous elements arising from the uterine corpus itself, because these can also be fleshy, polypoid, vesicular or grapelike.

Prognosis.—The prognosis is poor. The average period of survival ranges from eighteen months to three years. Shackman, in the *British Journal of Surgery*, reported the case of a 4-year-old child treated in 1947 by excision of the vagina, bladder, and urethra and transplantation of the ureters in the colon. The child was well two and one-half years after the operation. Meigs reported a case in which the patient is still living six years after the operation. In a series of patients observed at Duke Hospital over twenty-five years, none of the patients survived longer than five years. Thornton and Carter, in 1951, presented the case of a living child aged 3½ years in whom no recurrence followed roentgen therapy. A single case is reported of seven-year survival, but with ultimate death from recurrence. In cases of the vesical type of tumor, reported by Mostofi, recurrence took place within four months after excision and all but 1 patient died within twenty-four months, the causes of death being local recurrence, cachexia and uremia due to obstruction of the ureters, and hydronephrosis due to local growth of the tumor. The prognosis should always be guarded.

Pathologic Picture.—Histologically the tumor shows spindle cells, round cells and interlacing fibrils of thin connective tissue cells. A gray myxomatous or edematous fluid is almost always present. The presence of primitive muscle cells led to the use of the term rhabdomyosarcoma.

The components of botryoid sarcoma are most frequently mesenchymal or myxomatous tissue, cartilage and striated muscle. Other tissues identified by previous observers include epithelium, giant cells, smooth muscle, bone or osteoid tissue, fat, endothelium and nerve tissue, in decreasing order of frequency.

These sarcomas are mixed tumors but cannot be called mesodermal.

This tumor grows in the form of a simple or complex polypoid mass that is derived from mesenchymal cells and may exhibit any or all of the transformations displayed by multipotent mesenchymal cells. It is frequently suppurative and necrotic.

The tumor cells are highly pleomorphic and grow in myxomatous stroma, which is partly responsible for the ease with which the tumors are transplanted.

Metastases of this malignant lesion is predominantly local—to the parametrium, uterine cavity, pelvic lymph nodes, broad ligament, mesentery, cavity of the pelvis and urinary bladder. Distant metastases are uncommon. Only 2 cases reported of distant spread have been reported, in 1 to the brain and in the other to the pleura.

Death commonly results from distention of the vagina by the tumor mass, with pressure and obstruction of the ureters of sufficient degree to cause retention of urine and eventuate in urinary obstruction and hydronephrosis.

In the usual case the vagina is partially or completely filled with polypoid growths varying in size from that of a pea to that

of a plum. There is much resemblance to hydatid mole. The polyps are pinkish gray and look cystic, but if cut across they are observed to be solid or semisolid and rather gelatinous.

These tumors are vascular and tend to bleed spontaneously and rather profusely. One of the unusual features is the completeness of the epithelial covering, which is usually squamous epithelium. Local removal is followed by rapid recurrence.

A free cavity is necessary to the development of the polypoid character.

One case is reported in which there was intracranial metastasis to the left anterior fossa seven months after having been first seen with endometrial botryoides.

Symptoms and Signs.—In the usual case the vagina is partially or completely filled with polypoid growths. It is possible for this type of tumor to develop extensively without any symptoms, even to the protrusion of the growth from the vagina. Frequently it distends the vagina enough to cause retention of urine and frequently to result in local recurrences, urinary obstruction and death.

Cachexia, anemia, a negative fluid balance and other evidences of [illegible] metabolism inevitably ensue. Pain in the lower part of the abdomen and the pelvic region is an indication that [illegible] growth and damage have occurred. In later stages rectal tenesmus is common.

Hydronephrosis and uremia develop subsequently, with retention of urine and the development of a mass partially or completely filling the vagina.

A triad observed in all cases, almost without exception, consists of loss of weight, difficult urination and a mass protruding from the vagina. Profuse sanguineous vaginal discharge or vaginal bleeding is common also. The disease tends to metastasize and extend readily to adjacent pelvic viscera; that is, metastasis is local, by contiguous spread.

Morbidity and Mortality Rates.—De-
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Even wide excision of
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Treatment.—Since local
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no benefit," says Dr. F
Memorial Hospital, New Y

FIG. 1.—Specimen of tissue excised from vagina in case reported. Note polypoid collagenous appearance of lesion. Several smaller pieces were passed spontaneously per vaginam.

REPORT OF CASE

Clinical Picture.—A 2-year
well nourished and well devel

in for examination because of a mass bulging from the vagina. The mother stated that the child had complained of discomfort associated with urination for a few weeks, but this had been regarded as a childish complaint of no significance. Biopsy of the bulging mass revealed sarcoma botryoides. Examination with a nasal speculum was attempted in the office but was unsuccessful. The patient was then hospitalized pending the tissue report, because of spontaneous profuse vaginal bleeding.

With the patient under general anesthesia, vaginal examination was performed. Almost the entire vagina was filled with tumor tissue, and the uterus was enlarged to the size of a three-months pregnancy. It was no longer possible to identify the cervix. There were multiple areas of attachment of tumor tissue to the vaginal wall. A cystogram taken in the clinic revealed an extrinsic pressure defect posterior to the vesical base, with upward and anterior displacement of the bladder. There was also slight distention of the bladder. The pressure defect was caused by vaginal and corporal spread of the lesion, which had its origin in the vagina. The patient was then referred to another institution of the family's choice, since I considered the disease too advanced for specific treatment and could advise only expectant treatment. The child was then given 2,900 r for each of two anterior ports and 2,700 r for each of two posterior ports, with a total tumor dose of 3,500 r.

The tumor mass disappeared after irradiation, and one month after treatment no gross evidence of its presence was demonstrable. About three months later, however, the patient again began to have a foul, dark vaginal discharge with occasional fresh bleeding. Five months after the completion of roentgen therapy a mass was again noted protruding through the vulva, the vagina being completely filled with tumor.

The patient was then hospitalized. Physical examination revealed a purplish mass 4 by 3 cm. bulging from the vagina or protruding between the labia. The urethral meatus was not visible. Rectal examination revealed a large pelvic mass pressing on the anterior wall of the rectum. A skeletal survey revealed no metastases. Cystoscopic study revealed elevation of the bladder floor by a mass below, but the mucosa was intact. Proctoscopic study revealed an extrinsic mass at a depth of 6 cm., beyond which the proctoscope could not be passed. The rectal mucosa was intact. An intravenous pyelogram revealed no dilatation of the ureters of the renal pelves. There was, however, bilateral reduplication of the ureter.

After workup the patient was laparotomized, after which total hysterectomy and bilateral salpingo-oophorectomy were performed. The mass invaded left parametria and probably the left ureter, and it was known that a small amount of tumor had been left behind. The abdomen was closed, and total vaginectomy was performed from below. The patient was discharged from the hospital twelve days later, in good condition. One day prior to discharge a new series of roentgen treatments was begun on the left side of the pelvis.

The patient was readmitted to the hospital approximately three weeks after discharge from hospital. She died approximately five weeks after readmission with typical uremia and with recurrence of the tumor at the operative site. Death occurred approximately two and one-half months after radical operation was attempted.

Irradiation and operation were recommended and carried out elsewhere. It was my own opinion that only conservative treatment, such as cystostomy for anuria due to urethral obstruction, was indicated.

SUMMARY

A single case of dysontogenetic tumor of a urogenital sinus is reported. The patient was a 2-year-old girl who was considered inoperable on the first visit, because of extensive local spread of the malignant lesion. She was originally seen only because of a grapelike mass bulging from the vagina. Fewer than 120 such cases have been reported up to the time of writing.

Despite radical operation and irradiation, the child died quickly of typical uremia, death occurring within ten months from the time she was first seen. The ineffectiveness of roentgen irradiation for this type of disease which is typical of the embryonic type of tumor and less responsive to irradiation than other types is demonstrated.

The malignant tumor revealed a high rate of growth by local spread and did not

of a plum. There is much resemblance to hydatid mole. The polyps are pinkish gray and look cystic, but if cut across they are observed to be solid or semisolid and rather gelatinous.

These tumors are vascular and tend to bleed spontaneously and rather profusely. One of the unusual features is the completeness of the epithelial covering, which is usually squamous epithelium. Local removal is followed by rapid recurrence.

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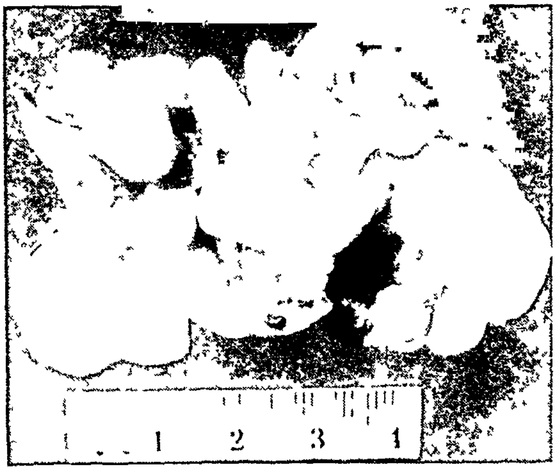

Fig 1.—Specimen of tissue excised from vagina in case reported Note polypoid collagenous appearance of lesion. Several smaller pieces were passed spontaneously *per vaginam.*

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A triad observed in all cases, almost without exception, consists of loss of weight, difficult urination and a mass protruding from the vagina. Profuse sanguineous vaginal discharge or vaginal bleeding is common also. The disease tends to metastasize and extend readily to adjacent pelvic viscera; that is, metastasis is local, by contiguous spread.

Morbidity and Mortality Rates.—Despite surgical and roentgen therapy, the average duration of life is one year. The disease is invariably fatal. In a case reported by Bocker and Minnich the patient survived for seven years. Simpson has said that he knows of no authenticated case of recovery.

Even wide excision of the entire genital tract with radiotherapy added has yet to cure a patient. No statement can be made as to curability in the early stage, since no patient has been reported as treated in this stage.

Treatment.—Since local metastases are common and distant metastases are rare, it is felt there might be a place for radical surgery in the treatment of this disease. Local excision has been recommended to be discarded by some. Irradiation has been given to several patients, without any marked success. "Irradiation has been of no benefit," says Dr. Frank R. Smith of Memorial Hospital, New York.

REPORT OF CASE

Clinical Picture.—A 2-year-old white girl, well nourished and well developed, was brought

in for examination because of a mass bulging from the vagina. The mother stated that the child had complained of discomfort associated with urination for a few weeks, but this had been regarded as a childish complaint of no significance. Biopsy of the bulging mass revealed sarcoma botryoides. Examination with a nasal speculum was attempted in the office but was unsuccessful. The patient was then hospitalized pending the tissue report, because of spontaneous profuse vaginal bleeding.

With the patient under general anesthesia, vaginal examination was performed. Almost the entire vagina was filled with tumor tissue, and the uterus was enlarged to the size of a three-months pregnancy. It was no longer possible to identify the cervix. There were multiple areas of attachment of tumor tissue to the vaginal wall. A cystogram taken in the clinic revealed an extrinsic pressure defect posterior to the vesical base, with upward and anterior displacement of the bladder. There was also slight distention of the bladder. The pressure defect was caused by vaginal and corporal spread of the lesion, which had its origin in the vagina. The patient was then referred to another institution of the family's choice, since I considered the disease too advanced for specific treatment and could advise only expectant treatment. The child was then given 2,900 r for each of two anterior ports and 2,700 r for each of two posterior ports, with a total tumor dose of 3,500 r.

The tumor mass disappeared after irradiation, and one month after treatment no gross evidence of its presence was demonstrable. About three months later, however, the patient again began to have a foul, dark vaginal discharge with occasional fresh bleeding. Five months after the completion of roentgen therapy a mass was again noted protruding through the vulva, the vagina being completely filled with tumor.

The patient was then hospitalized. Physical examination revealed a purplish mass 4 by 3 cm. bulging from the vagina or protruding between the labia. The urethral meatus was not visible. Rectal examination revealed a large pelvic mass pressing on the anterior wall of the rectum. A skeletal survey revealed no metastases. Cystoscopic study revealed elevation of the bladder floor by a mass below, but the mucosa was intact. Proctoscopic study revealed an extrinsic mass at a depth of 6 cm., beyond which the proctoscope could not be passed. The rectal mucosa was intact. An intravenous pyelogram revealed no dilatation of the ureters of the renal pelves. There was, however, bilateral reduplication of the ureter.

After workup the patient was laparotomized, after which total hysterectomy and bilateral salpingo-oophorectomy were performed. The mass invaded left parametria and probably the left ureter, and it was known that a small amount of tumor had been left behind. The abdomen was closed, and total vaginectomy was performed from below. The patient was discharged from the hospital twelve days later, in good condition. One day prior to discharge a new series of roentgen treatments was begun on the left side of the pelvis.

The patient was readmitted to the hospital approximately three weeks after discharge from hospital. She died approximately five weeks after readmission with typical uremia and with recurrence of the tumor at the operative site. Death occurred approximately two and one-half months after radical operation was attempted.

Irradiation and operation were recommended and carried out elsewhere. It was my own opinion that only conservative treatment, such as cystostomy for anuria due to urethral obstruction, was indicated.

SUMMARY

A single case of dysontogenetic tumor of a urogenital sinus is reported. The patient was a 2-year-old girl who was considered inoperable on the first visit, because of extensive local spread of the malignant lesion. She was originally seen only because of a grapelike mass bulging from the vagina. Fewer than 120 such cases have been reported up to the time of writing.

Despite radical operation and irradiation, the child died quickly of typical uremia, death occurring within ten months from the time she was first seen. The ineffectiveness of roentgen irradiation for this type of disease which is typical of the embryonic type of tumor and less responsive to irradiation than other types is demonstrated.

The malignant tumor revealed a high rate of growth by local spread and did not

of a plum. There is much resemblance to hydatid mole. The polyps are pinkish gray and look cystic, but if cut across they are observed to be solid or semisolid and rather gelatinous.

These tumors are vascular and tend to bleed spontaneously and rather profusely. One of the unusual features is the completeness of the epithelial covering, which is usually squamous epithelium. Local removal is followed by rapid recurrence.

A free cavity is necessary to the development of the polypoid character.

One case is reported in which there was intracranial metastasis to the left anterior fossa seven months after having been first seen with endometrial botryoides.

Symptoms and Signs.—In the usual case the vagina is partially or completely filled with polypoid growths. It is possible for this type of tumor to develop extensively without any symptoms, even to the protrusion of the growth from the vagina. Frequently it distends the vagina enough to cause retention of urine and frequently to result in local recurrences, urinary obstruction and death.

Cachexia, anemia, a negative fluid balance and other evidences of declining metabolism inevitably ensue. Pain in the lower part of the abdomen and the pelvic region is an indication that irremediable growth and damage have occurred. In later stages rectal tenesmus is common.

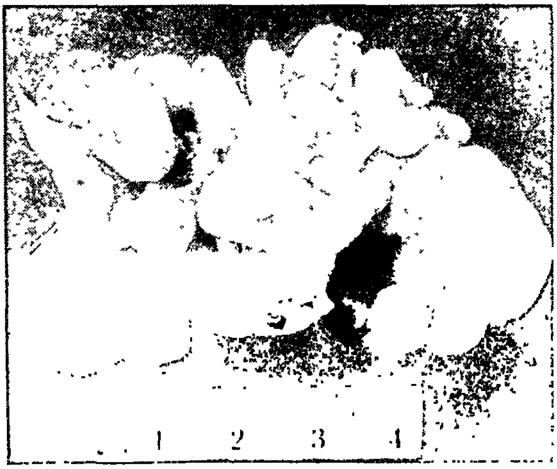

Fig. 1.—Specimen of tissue excised from vagina in case reported. Note polypoid collagenous appearance of lesion. Several smaller pieces were passed spontaneously *per vaginam.*

Hydronephrosis and uremia develop subsequently, with retention of urine and the development of a mass partially or completely filling the vagina.

A triad observed in all cases, almost without exception, consists of loss of weight, difficult urination and a mass protruding from the vagina. Profuse sanguineous vaginal discharge or vaginal bleeding is common also. The disease tends to metastasize and extend readily to adjacent pelvic viscera; that is, metastasis is local, by contiguous spread.

Morbidity and Mortality Rates.—Despite surgical and roentgen therapy, the average duration of life is one year. The disease is invariably fatal. In a case reported by Bocker and Minnich the patient survived for seven years. Simpson has said that he knows of no authenticated case of recovery.

Even wide excision of the entire genital tract with radiotherapy added has yet to cure a patient. No statement can be made as to curability in the early stage, since no patient has been reported as treated in this stage.

Treatment.—Since local metastases are common and distant metastases are rare, it is felt there might be a place for radical surgery in the treatment of this disease. Local excision has been recommended to be discarded by some. Irradiation has been given to several patients, without any marked success. "Irradiation has been of no benefit," says Dr. Frank R. Smith of Memorial Hospital, New York.

REPORT OF CASE

Clinical Picture.—A 2-year-old white girl, well nourished and well developed, was brought

in for examination because of a mass bulging from the vagina. The mother stated that the child had complained of discomfort associated with urination for a few weeks, but this had been regarded as a childish complaint of no significance. Biopsy of the bulging mass revealed sarcoma botryoides. Examination with a nasal speculum was attempted in the office but was unsuccessful. The patient was then hospitalized pending the tissue report, because of spontaneous profuse vaginal bleeding.

With the patient under general anesthesia, vaginal examination was performed. Almost the entire vagina was filled with tumor tissue, and the uterus was enlarged to the size of a three-months pregnancy. It was no longer possible to identify the cervix. There were multiple areas of attachment of tumor tissue to the vaginal wall. A cystogram taken in the clinic revealed an extrinsic pressure defect posterior to the vesical base, with upward and anterior displacement of the bladder. There was also slight distention of the bladder. The pressure defect was caused by vaginal and corporal spread of the lesion, which had its origin in the vagina. The patient was then referred to another institution of the family's choice, since I considered the disease too advanced for specific treatment and could advise only expectant treatment. The child was then given 2,900 r for each of two anterior ports and 2,700 r for each of two posterior ports, with a total tumor dose of 3,500 r.

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Despite radical operation and irradiation, the child died quickly of typical uremia, death occurring within ten months from the time she was first seen. The ineffectiveness of roentgen irradiation for this type of disease which is typical of the embryonic type of tumor and less responsive to irradiation than other types is demonstrated.

The malignant tumor revealed a high rate of growth by local spread and did not

tend to metastasize distally to bone, lungs, etc.

ZUSAMMENFASSUNG

Es wird ueber einen einzelnen Fall einer dysontogenetischen Geschwulst des Sinus urogenitalis berichtet. Es handelt sich um ein 2jaehriges Maedchen, das bei der ersten Untersuchung wegen der ausgedehnten oertlichen Verbreitung der boesartigen Erkrankung als nicht operierbar angesehen wurde. Sie kam urspruenglich nur zur Untersuchung wegen einer traubenartigen aus der Scheide hervortretenden Masse. Bis zur Zeit der Niederschrift dieser Arbeit sind weniger als 120 solcher Faelle veroeffentlicht worden.

Trotz radikaler Operation and Strahlenbehandlung starb das Kind schnell an einer typischen Uraemie innerhalb von 10 Monaten nach der ersten Untersuchung. Die Wirkungslosigkeit der Roentgenbestrahlung ist typisch fuer diese embryonale Form der Geschwuelste, die auf Bestrahlungen weniger als andere Formen ansprechen.

Die boesartige Geschwulst zeigte ein rasches lokales Wachstum, aber keine Tendenz zu entfernter Metastasierung in die Knochen, die Lungen usw.

RÉSUMÉ

Un cas isolé de tumeur dysontogénétique du sinus urogénital est décrit. Il s'agit d'une fillette de 2 ans considérée comme inopérable lors du premier examen, du fait de l'extension locale d'une lésion maligne. Elle a été amenée à la consultation à cause d'une masse en grappe faisant saillie hors du vagin. Il n'a été rapporté que 120 cas semblables jusqu'à ce jour.

Malgré une intervention radicale et des irradiations, l'enfant est décédée rapidement dix mois après le premier examen, avec une urémie caractérisée. L'inefficacité des rayons X dansce genre d'affection qui est caractéristique du type de tumeur embryonnaire et réagit moins bien que d'autre aux irradiations, est démontrée.

La tumeur maligne a révélé une croissance rapide par expansion locale, sans tendance aux métastases osseuses distales, poumons, etc.

RIASSUNTO

Viene riferito un caso di tumore disontogenetico del seno urogenitale. La paziente, una bambina di due anni, era stata giudicata inoperabile alla prima visita per l'estensione locale delle lesioni. Essa era stata vista all'inizio solo perchè vi era una massa a grappolo che sporgeva dalla vulva.

Di casi del genere ve ne sono descritti meno di 120 nella letteratura fino ad oggi. Venne fatto un intervento radicale seguito da irradiazione, ma la bambina morì rapidamente di uremia entro 10 mesi dalla prima visita. Questo dimostra l'inefficacia della roentgenterapia in queste affezioni in cui il tumore è di natura embrionale e risponde all'irradiazione meno di qualunque altro tipo.

Il tumore dimostrò un alto grado di malignità e rapidità di invasione locale ma non diede metastasi.

RESUMEN

Se da cuenta de un solo caso de tumor disontogenético del tracto urogenital. Se trata de una niña de dos años que en la primera visita fué considerada inoperable por la gran extensión de la lesión maligna. Primeramente había sido vista por una masa arracimada que aparecía por la vagina. Hasta la fecha no llegan a 120 los casos publicados.

A pesar de la operación radical y de la irradiación la niña murió rapidamente de uremia típica antes de diez meses de haber sido vista por primera vez. Se confirma la ineficacia de la radioterapia en este tipo

de enfermedades pues los tumores embrionarios responden mucho peor que los demás.

En el tumor se aprecié un crecimiento invasor local muy intenso, pe ro sin tendencia a las metástasis a distancia en pulmones, huesos u otros órganos.

SUMARIO

Apresenta um unico caso de tumor disontogenético de sinus urogenital. Trata-se de uma menina de 2 ânos de idade que se considerou inoperavel devido a extensa disseminação local da lesão maligna. Foi originalmente examinada por causa de uma massa em forma de cacho de uva emergindo da vagina. Até a redação do presente trabalho menos de 120 desses casos foram relatados.

Apesar da operação radical e irradiação, a criança morreu repidamente com uremia tipica, déz meses após ter sido examinada pela primeira vez. Demonstra a ineficiencia da roetgenoterapia neste tipo de tumor embriogênico sendo o que menos responde a irradiação em relação aos outros.

O tumor maligno revelou um alto grau de crescimento por disseminação local não apresentando tendência a se metastatisar distalmente a osso, pulmões, etc.

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The most difficult fractures of the bones of the skull are those which occur along the sutures. Fractures are especially caused by heavy and rounded missiles and, in particular, by those which strike at right-angles, rather than from glancing blows. In order to determine whether there is a fracture present or not, give the patient a stalk of asphodel or fennel to chew with either jaw, and tell him to note whether he notices any bony crepitus: broken bones seem to make a noise.

As time goes on, fractures give rise to signs: sometimes on the seventh day, sometimes on the fourteenth, or at other times. The flesh may come away from the bone which becomes livid: there is pain and fluid collects underneath. It is then difficult to do anything to help.

—Hippocrates

Some Surgical Aspects of the Upper Eyelid

NAUMANN T. MASCATI, D.Ophth., M.S., F.I.C.S.*

SURAT, INDIA

Surgical treatment by various methods, as applicable to the condition of the patient in need of repair of the upper eyelid, is described. The various factors causing distortion of the normal anatomic picture and disturbance of function of the upper eyelid are discussed, together with their complications and the appropriate method of surgical approach to each anomaly. The treatment of vascular tumor of the lid with beta ray irradiation is described. Definite emphasis is laid upon early attention to, and surgical repair of, lacerations of the upper eyelid. The reformation of the upper eyelid by means of a plastic surgical procedure is explained.

OPEN Sesame and the scenes of this good or this bad world are projected before you. It is the act of drawing up the curtains that throws wide open the windows of the soul to the outside world. Verily it is this curtain, the upper eyelid, that allows you to utilize the sense of sight. And sleep, the reservoir of strength, an escape from care and worry, a restorer of hope and an opportunity for dreams, is possible only if these precious curtains are drawn down perfectly well over the tired orbs. I wonder how many realize the great importance of the maintenance of the normal anatomic character and function of the eyelids.

I shall try to present from my meager experience some practical and perhaps useful suggestions for the surgical treatment of anomalies of the upper eyelid. These anomalies, in my opinion, should be classified as: (1) congenital, (2) traumatic, (3) inflammatory, (4) neoplastic (5) paralytic and (6) endocrine. Since space is limited and the subject unlimited in its intricacies, I shall take up only a few of the factors that cause loss of its physiologic functions, either by anatomic mutilation or by paralysis of the levator muscle.

Trauma.—This may occur in many ways. The type of injury most common, however, is laceration of the upper eyelid from burst soda water bottles and motor accidents. Such a wound not only lacerates the lids and the face but frequently injures the eyeball.

Another common cause of laceration and even avulsion of the upper eyelid is the 'bar-hook" that is used to hang the

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*Surgeon, Mascati Eye Hospital, Surat; Honorary Ophthalmic Surgeon, Surat Ayurvedic Hospital, Surat; Honorary Surgeon, R.N.C. Free Eye Hospital, Bulsar; professor of Ophthalmology, O.N.A. Medical College, Surat.

Read at the Third Annual Congress of the Indian Section, International College of Surgeons, Indore, January 1947.

Submitted for publication Oct. 2, 1958.

kerosene lantern in small towns or villages in a district where no electrical lighting facilities exist. When it occurs, it is always stated that the lantern had not been hung and that the patient, going through the darkened room, had his upper eyelid caught in the bare lower hook (Fig. 1). I have had cases of this type of injury in which it occurred at the precise time of the evening when the patient, owing to lack of illumination, could not see the bar-hook, which caught in the superior fornix and tore the upper eyelid (Fig. 2*A*).

Prompt attention to laceration, or the lack of it, may mean the preservation or loss of vision. In all cases of injury to the eyelids, thorough investigation for any extension of the trauma to the eyeball or the orbital bones must be carried out. The presence of emphysema indicates a fracture extending into one or more of the paranasal sinuses. The optimal time for repair of a laceration, if expectation of gratifying results are to be obtained, is within the first few days after the initial injury. After a week it is extremely difficult to bring about a desirable cosmetic effect, because the contracted orbicularis muscle fibers encircling the palpebral fissure become fibrotic, and approximation of the wound edges is no longer possible. In cases of extensive and severe laceration, the fibrotic contracture of the muscle ultimately produces a stub of the lacerated eyelid, consisting mainly of connective tissue. It is a happy fact that, because of the excellent blood supply of the eyelids, such lacerations rarely become infected, and healing by primary intention occurs in the great majority of cases.

Certain important rules must come uppermost in the mind, when a patient so injured is brought for specialized care. First, conserve as much tissue as possible, unless it is obviously devitalized. Second, repair the laceration early, or contracture of the orbicularis muscle will distort the whole anatomic structure of the lid, with a resultant loss of function. Third, preserve the continuity of the canaliculus, approximating it to the bulbar conjunctiva through the punctum.

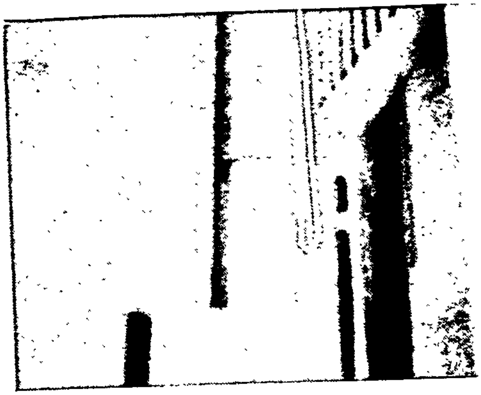

Fig. 1.—Bar-hook. Kerosene lantern is hung in lower hook.

In all cases of injury to the upper eyelid one should keep in mind the period that has elapsed between the time of occurrence of the injury and the time one attends the patient, because during this interval some intervention may have been attempted by a general surgeon, a resident or a general practitioner, with inadequate attention to the minute anatomic features of the upper eyelid. I have observed that they usually stitch up the cutaneous wounds with heavy suturing material, placing the sutures rather deep, without proper approximation of the torn tissue *layer by layer*. This is most unfortunate—indeed, disastrous—because what the ophthalmologist encounters later is a ptosed, contracted lid with marked cicatricial ectropion or entropion. Preservation of the lid border and the tarsal plate is imperative; preservation of the attachment of the medial palpebral ligament should be borne in mind, and most important of all, painstaking and careful attention is required to save the point of insertion of the involuntary Mueller's muscle fibers and the fibers of the levator muscles at the upper border of the tarsal plate. It is not superfluous to emphasize that the repair must be done in a systematic manner, with the delicate anatomic structure of the eyelid in mind. The surgeon should take his time, as this is not an exsanguinating condition. Proper anesthesia with local infiltration of procaine hydrochloride with hyaluronidase incorporated, should be induced. The latter agent has inestimable value. There is no further distortion of the tissues because of the action of the enzyme, and the effect of the anesthetizing agent is perfect.[1] Local surface anesthesia of the cornea and the conjunctiva is ob-

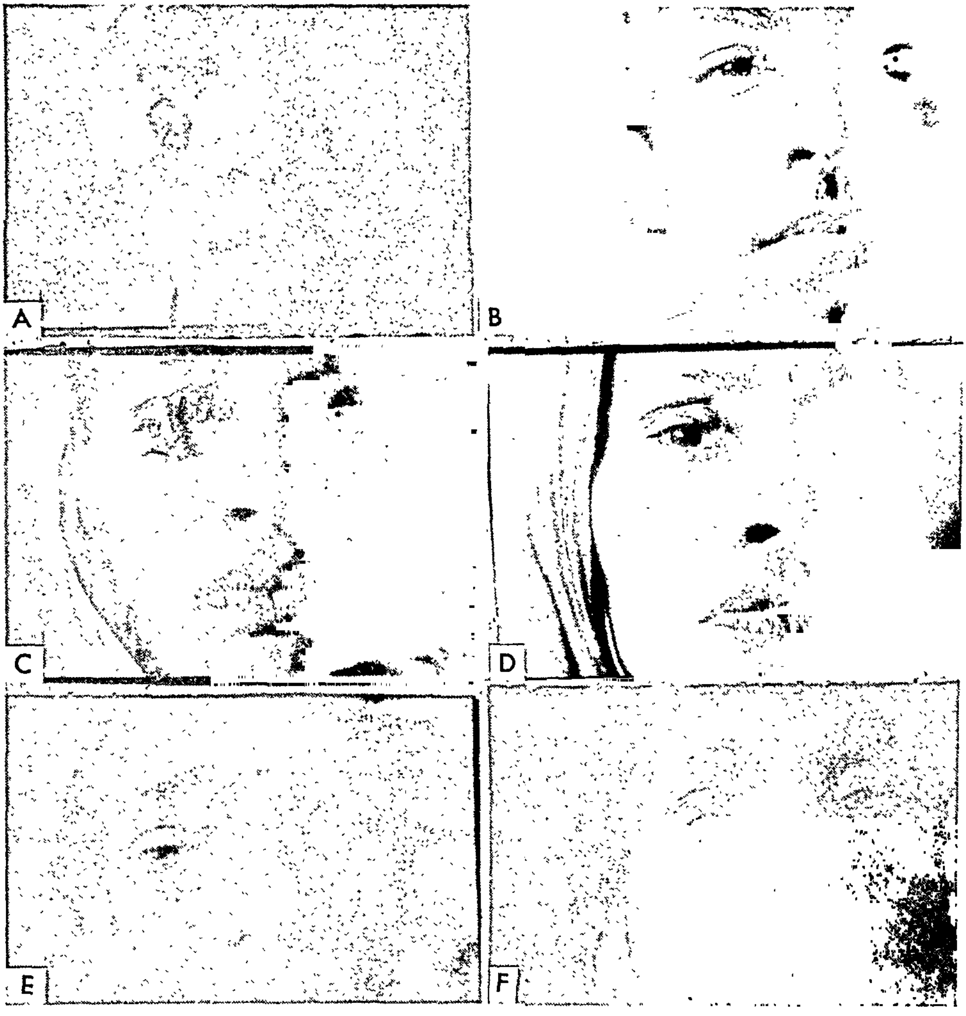

Fig. 2.—*A*, upper eyelid completely torn from its medial attachment, right up to its lateral one, and hanging on the cheek. *B*, postoperative condition of same patient on twentieth day. Normal elevation of right upperlid is achieved. *C*, similar case with the same type of trauma lacerating right upper lid, before operation. Bare sclera and cornea can be clearly visualized through the torn lid. *D*, same patient after plastic operation. *E*, mucocele of right frontal sinus displacing right upper eyelid and eyeball. F, appearance of eyeball and upper lid, right side, after operation.

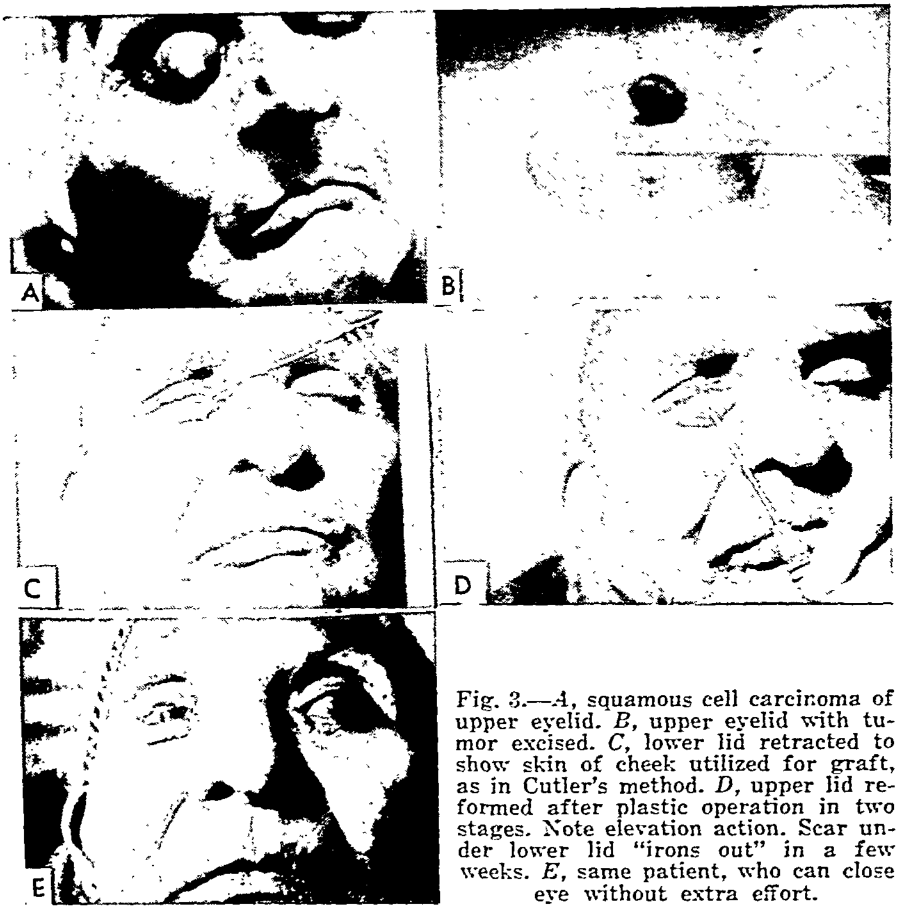

Fig. 3.—*A*, squamous cell carcinoma of upper eyelid. *B*, upper eyelid with tumor excised. *C*, lower lid retracted to show skin of cheek utilized for graft, as in Cutler's method. *D*, upper lid reformed after plastic operation in two stages. Note elevation action. Scar under lower lid "irons out" in a few weeks. *E*, same patient, who can close eye without extra effort.

tained with 5 per cent Pontocaine solution. Every effort must be made to fit in the lacerated parts of the tarsal plate like pieces in a jigsaw puzzle and to restore, as far as possible, the normality of the tissue. The medial palpebral ligament, if torn, should be anchored again to the lacrimal crest, and the continuity of the canaliculus must be restored by passing through the punctum and the cut parts of the canaliculus either a polyethylene tube or nylon threads, which are brought out through the lacrimal sac and tied in a knot.[2] Then the tarsal plate is sutured with No. 5 0 plain catgut from the anterior surface side of the lid. If it is done from the conjunctival side the sutures rub against the cornea, producing abrasions and an unbearable irritation after the operation. Any breach in the conjunctiva of the superior fornix, which is fairly frequent, should be repaired with continuous No. 6 0 silk. The torn fibers of the orbicularis hardly need any suturing, for these are approximated as soon as the tarsal plate is brought into normal position. The tendinous fibers of the levator and Mueller's muscles, if torn, should be diligently searched for and the upper border of the tarsal plate repaired; otherwise ptosis is bound to result. The subcutaneous tissue and skin are then sutured with No. 5/0 silk. The delicate texture of the skin of the upper eyelid hardly produces any noticeable scar unless there is a keloid-forming tendency (Fig. 2, *B*, *C*, *D*, *E*, and *F*).

All this refers to accidental injury, but I often encounter cases in which gross mutilation of the upper eyelid has been caused by an attempt to correct entropion and trichiasis. I have handled a number of such cases in which the whole of the tarsal plate and virtually the lid border, to a considerable extent, had been chopped off. Possibly the surgeon's idea was "no eyelid, no trichiasis." This is like removing the upper lip so that no mustache will grow!

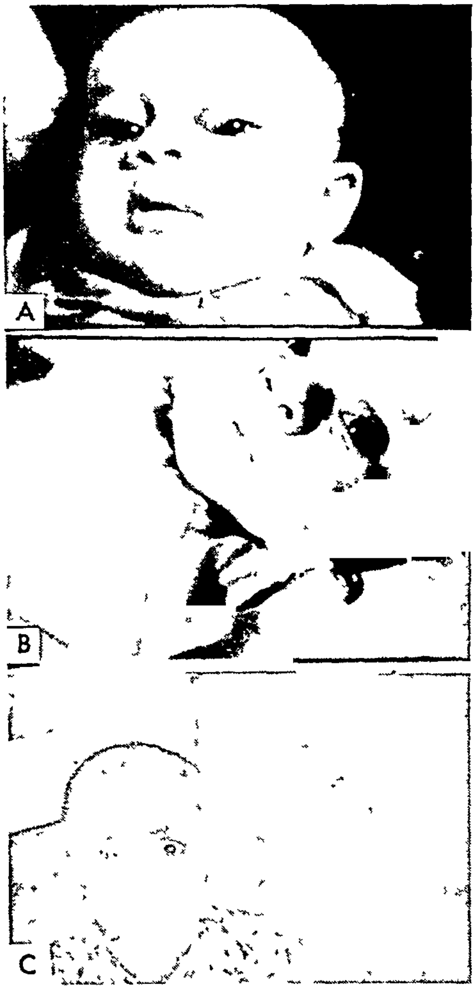

Fig. 4.—*A*, hemangioma of left upper lid before beta irradiation. *B*, same patient after radiation therapy. Note absence of scar. *C*, retraction of left upper lid. Note staring appearance in ordinary position of gaze.

Inflammatory.—The upper eyelid can be distorted by cicatricial contraction in the presence of trachoma causing entropion and trichiasis. Scar formation following lid abscesses, meibomian adenitis or inflamed mucocele of the frontal sinus also distort the normal shape of the upper eyelid (Fig. 3, *A* and *B*). Orbital cellulitis, unless an abscess has been drained through the upper lid, does not leave any deformity behind. Scars following cicatrization of a sinus due to osteomyelitis of the orbital rim produce ectropion, which needs surgical repair. For cicatricial entropion with trichiasis of the upper eyelid, many methods have been evolved to bring the malplaced eyelashes back to their normal positions. I have been employing, with quite gratifying results, my own method[3] and also that of Bussaca.[4] I find the latter perfect. The correction can be adjusted to the requirements in the individual case. The cosmetic results are excellent and the chance of recurrence nil.

Neoplasms.—The upper eyelid can be a seat of primary malignant growth, e.g., a squamous cell carcinoma or an adenocarcinoma. The benign growths that occur in the lid region are many. I shall mention 2 cases of malignant disease diagnosed elsewhere and treated as chronic meibomian adenitis (Figs. 3, 4 and 5). For this repair and reconstruction of the upper eyelid I have been using exclusively the method of Cutler and Beard (1955) and Cutler (1948),[5] that is, re-formation of portions of the upper eyelid from the skin of the ipsilateral cheek and the conjunctiva of the lower fornix. The results have been highly satisfactory. The patients have been

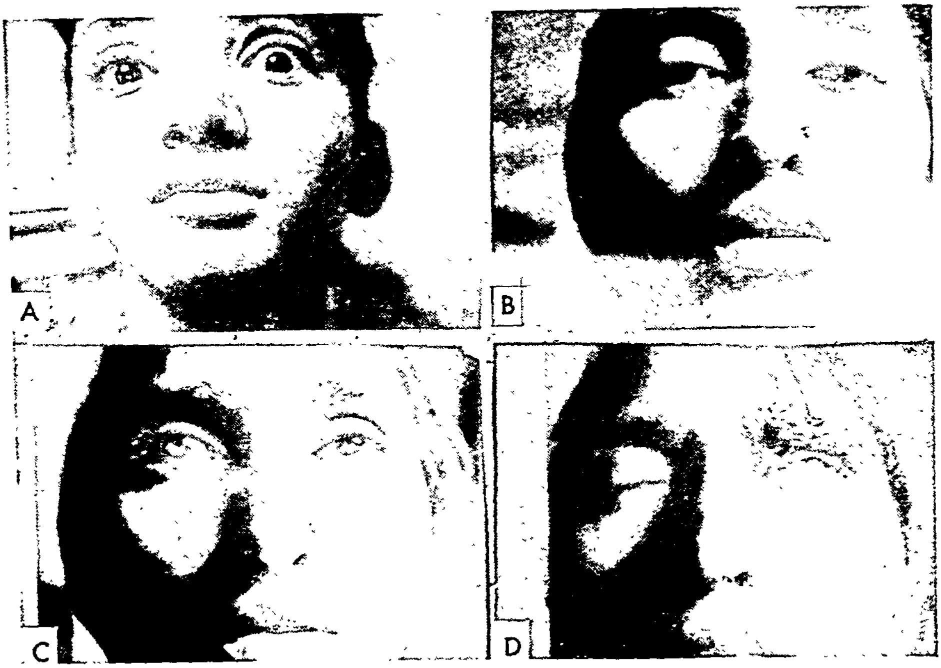

Fig. 5.—*A*, appearance of patient after plastic surgery operation. *B*, ptosis of left upper eyelid. *C*, lag of left upper lid on elevation. *D*, postoperative appearance. Left upper lid with stay sutures stuck to eyebrow region; frost suture in lower lid.

followed up regularly for the past three years. There has been no recurrence and no metastasis. I must mention, however, that such surgical repairs of such defects are cumbersome and time-consuming. In many cases repeated operations are needed to obtain the desired results.

As regards the benign growths, a case of vascular tumor is reported. It is interesting to remember that angiomas are rather frequent in early infancy and in the female. The disfigurement caused by them or left after surgical treatment, or after the injection of sclerosing solution injections, or after cauterizing therapy, is so great that we must reject *a priori* any of these methods; they produce mutilations that subsequently require painstaking and highly elaborate plastic reparations, which at best result in a crude approach to normal.[6] I have had a few cases of this type of tumor in infants. I have irradiated the growths with short-wave radiations. The case here illustrated is that of a girl aged 4 months. The tumor had apparently existed from birth (Fig. 4,*A* and *B*). I gave her beta ray irradiations with a Strontium-90 applicator, in a total dose of 1,875 rep., divided at definite intervals. The action of the short-wave radiations is selective, destroying the neoplastic tissues; e.g., causing alterations in the endothelium of the neoformed blood vessels, which ultimately results in thrombosis of these vessels and subsequent fibrillations. During the slow action of this therapy the surrounding healthy tissues are not damaged because, first, the diameter of the "business end" of the beta ray applicator is of a specific measurement.

Strain Films in Traumatic Surgery

MARTYN C. RATZAN, M.D., F.C.C.P., F.I.C.S.
BROOKLYN, NEW YORK

FOR more than ten years I have observed that the demonstration of fractures that should be clinically demonstrable cannot be corroborated by roentgenographic visualization, thus reversing a principle of legerdemain: believing is not always seeing. With the impression that it was not the roentgen film that belied the diagnosis but my inaccurate reproduction of the pathologic picture, I have attempted a technic of dynamic roentgenology.

With this shift from a passive, static, standard position for taking a roentgenogram of an injured part, I attempt, first, to simulate the mechanism of the fracture and, second, to accentuate and emphasize the injured part so as best to delineate the actual fracture site. This dynamic evaluation of fractures is based not only on the mechanism of trauma but on understanding of the process of bone healing. Roentgenograms, initially viewed, all too frequently will demonstrate no distinct fracture line except a condensation of bone which suspiciously and clinically should be treated as a fracture until proven otherwise. Roentgenograms taken a week and sometimes two weeks after the initial trauma will demonstrate fractures that previously could not be identified. The reason for this type of delayed visual demonstration of a fracture is the fact that dehiscence in the two areas above and below the line of fracture sometimes cannot be visualized at the beginning unless the trauma is intense and bone separation at the fracture site is highly pronounced.

When fracturing occurs, the initial process consists of the laying down of bony precursors in the form of osteoblasts and other elements forming a hematoma. At this particular time this area is not radiopaque as compared with the rest of the bone; a fracture line, therefore, can be much more plainly visible. Some two weeks after the initial trauma a bridge of callus begins to form, and this bridging, together with the loose, edematous, osteoblastic area, produces a zone less intense than the normal bone; and so the dehiscence is very clearly seen. After this particular time the fracture itself begins

A method is advanced and a hypothesis promulgated that visualization of fractures and the pathologic end results of trauma is at present limited by a lack of appreciation of the dynamic aspects of an injury. Imitation of the position in which the insult occurred and accentuation of the area of the deformity or fracture dehiscence are suggested, with a technic for the study of fractures in three areas. Other areas will be explored in the near future and reported in further publications.

Submitted for publication Jan. 14, 1959.

to fade off into the surrounding tissue on either side, becoming less and less discernible, until the six weeks normally required for secondary bone or callus formation have elapsed. It is thus apparent that, if one is to secure maximum visibility at the time of trauma, positioning is paramount. Simulation of the forces of trauma in a dynamic fashion to put a strain on the injured fragments so that the dehiscence is more clearly delineated, is of incalculable importance. It is also worth while to remember, in considering the mechanism of bone healing, that in addition to this dynamic approach to bone fracture and roentgen interpretation, follow-up roentgenograms should be taken one and two weeks after the operation if there is any impression that fracture has occurred but is not readily demonstrable on the films taken at the time of the first trauma.

This paper concerns fracture in three areas only: the ankle, the rib and the hip. Roentgenograms of the ankle are taken with the patient holding a length of bandage tied to the great toe which is held in dorsiflexion. The tube is angulated at an angle, of about 45 degrees, facing the dorsum of the foot. Inversion and eversion fracturing stresses in oblique and lateral views are most clearly discernible when this method is used. For rib fractures the films are taken with the patient either in deep expiration with the arms in front of the body, hugging the cassette to flare the chest for the 6-foot plates or, with the Buckey, the 2-foot tube distance, and the patient expiratory and flat on the back, with a pillow between the shoulder blades to flare the ribs equally and to accentuate the interspaces. This is especially helpful with fractures of the lower ribs and fractures occurring in the axillary line.

Fractures of the hip are photographed in the oblique position, with the hip rotated inward and with inverted foot and knee holding the great toe as aforedescribed. By this method, in my opinion, fractures are demonstrable which seemingly are difficult to visualize with the patient in the standard positions. Fractures of the fibula and tibia, isolated fractures of the greater trochanter of the femur, fractures of the lower ribs and fractures of the overlapping areas may thus be more readily visualized, confirming the clinical impression.

ZUSAMMENFASSUNG

Die Darstellung von Knochenbruechen und der pathologischen Entzustaende von Verletzungen ist zur Zeit durch die mangelnde Wuerdigung der Dynamik der Verletzung beschraenkt. Es wird vorgeschlagen, die Stellung, in der die Verletzung erfolgte, nachzuahmen und die Gegend der Entstellung oder der Bruchspalte hervorzuheben. Die Technik fuer eine solche Untersuchung wird fuer Brueche in drei Koerpergegenden beschrieben. Ueber weitere Gegenden wird in naher Zukunft berichtet werden, sowie die entsprechenden Akten vervollstaendigt und ausgewertet sind.

SUMARIO

Um método é apresentado e uma hipotese promulgada em vista da falha na apreciação da dinãmica da injuria, na visualisação das fraturas e nos resultados finals dos traumas. Sugere imitação da posição na qual o trauma ocorreu e acentuação da are a da deformidade ou da fratura, por uma técnica para o estudo destas fraturas em tres areas. Outras areas serão delimeadas em futuro proximo assim que as fichas e observações forem completadas e avaliadas.

RÉSUMÉ

L'auter propose une nouvelle méthode s'appuyant sur l'hypothèse selon laquelle la visualisation des fractures et les résultats pathologiques terminaux des trauma-

tismes sont actuellement limités par la carence des moyens d'appréciation de la dynamique d'une lésion. Il suggère la reconstitution de la position dans laquelle l'accident s'est produit, avec accentuation de la zone de déformation ou de la déhiscence osseuse, selon une technique en vue de l'étude des fractures dans trois régions définies. D'autres régions seront mises en évidence dans un proche avenir au fur et à mesure que les fiches et dossiers actuellement établis auront été complétés et évalués.

RESUMEN

Se preconiza en este trabajo un método y se enuncia une hipótesis sobre la base de que la visualización de las fracturas y los resultados patológicos de los traumatismos son hoy por hoy limitados debido a la falta de apreciación de la dinámica del trauma. Se propone una imitación de la posición en la cual ocurrió el traumatismo y una acentuación del area de deformidad, fractura o dehiscencia con una técnica para el estudio de las fracturas en tres áreas diferentes. Serán estudiadas nuevas áreas anatómicas a medida que los archivos del autor lo vayan permitiendo.

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Inquiring thought, probably the oldest thinking in medicine, began when man began to explore the world and discovered how to use fire, metals, the ax, wheel, and lever, and how to make pottery. During succeeding ages it bloomed into the analytical thinking of the Greek philosophers and the introduction of the first experiments capable of reproduction. In this path of progress, alongside the work of the Italian scientific academies and the Invisible College in London, which replaced the medieval universities, men like Galileo, Harvey, Newton, and Haller stand out brilliantly. Their curiosity and self-abnegation gave new life to the noble Aristotelian tradition of wanting to know the reason for things and to understand Nature scientifically.

—*Marti-Ibañez*

Plastic and Reconstructive Surgery

Cleft Lip

MUNAWAR ALI, M.D., F.R.C.S. (Eng.), F.I.C.S.

KARACHI, PAKISTAN

The etiologic and embryologic backgrounds of cleft lip are reviewed, and a simple technic for closure of unilateral and double cleft lip is presented. In many cases a simple pairing method of closure is preferred.

Closure immediately after birth, with the region under local anesthesia, is strongly advocated, because it provides a good cosmetic result and leads to proper development of the facial area.

PERHAPS more than 1,000 children are born every year in Pakistan with cleft lip, with or without involvement of the palate. Early reconstructive surgical intervention, in my opinion, offers the best chance of a good cosmetic result and proper development of the face.

Clefts in the lip are twice as common on the left as on the right side, and twice as common in the male as in the female. In 25 per cent of the cases clefts are bilateral. In 50 per cent they are complete, involving the lip, the alveolus and the palate.

Streeter[1] pointed out that the upper lip is formed by fusion of the premaxillary or incisive process (globular process of His) with the maxillary centers (maxillary process of His) of the two sides. Failure of these embryonic parts to fuse results in cleft lip.

Normal fusion commences at the floor of the nostril and extends toward the border of the lip; hence, a partial cleft always extends cranially from the lip margin.

Owing to failure of the mesoderm from one side to penetrate the central part of the lip, a complete cleft in the lip may result; or a partial cleft with a narrow bridge of skin, or only a gap in the muscle, the skin and mucous membrane of the lip remaining intact.

It is important to note that owing to the failure of the mesoderm to develop, there is not only a cleft but some deficiency of the tissues around it.

It should not be forgotten that in 10 per cent of the children with this deformity there may be other physical or mental defects.

The actual cause of cleft lip has not been definitely determined. Heredity apparently plays a significant role. Careful records, particularly those of Fogh-Anderson,[2] suggest that 30 per cent have a familial history of similar defects. If both parents are normal, the chance that the baby will have a cleft lip is only 1:100. If one of the parents is affected, the chance is 2:100. In normal parents, who have a cleft baby, the chance of a later child having cleft lip is 5 per cent. If one parent and one

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Submitted for publication June 12, 1959

child are affected, however, this chance rises to 15 per cent. If both parents have a cleft, the risk of cleft in their children is extremely high.

Experimental work on pregnant animals by Warkany[3] and Giroud[4] has established the fact that maternal nutritional deficiency, especially of Vitamins A and B_{12}, pantothenic acid and folic acid, disturbs fetal development and results in malformations, including cleft lip and palate.

Vitamin E deficiency appears to produce, in the bloodstream, an antiproteolytic estrogenic factor. Its deficiency in early weeks of pregnancy may result in cleft lip or palate.

Frazer, Feinstat and Kalter[5] have pointed out that deficiency or excess of certain hormones, e.g., thyroid hormone or cortisone, may be capable of teratogenic action during early pregnancy, and cleft lip and palate may be one of the resulting abnormalities. This should provide ample warning to the physician not to prescribe a teratogenic substance like cortisone in the early weeks of pregnancy!

Gillman and his associates[6] are convinced that rubella in the first ten weeks of pregnancy and roentgen irradiation may result in anomalies in the fetus, including cleft lip.

Peer[7] noted an increased incidence of cleft lip and palate if the mother was treated with cortisone during early preg-

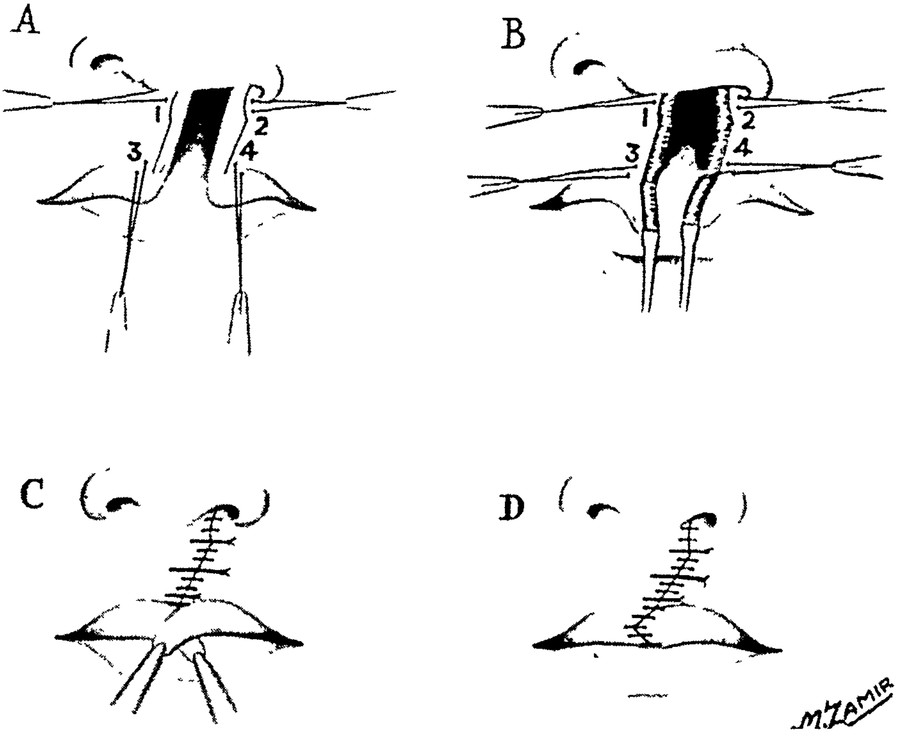

Fig. 1.—*A*, four guide stay sutures applied (1) at tubercle on base of columella; (2) at juncture of alar base with lip; (3) 2 mm. inside on ridge above red margin at medical end of the cleft, and (4) 2 mm. outside point where ridge on lateral part of lip just fades. *B*, cleft margins paired while stay sutures 1 and 3 and 3 and 4 are held apart under tension. By sharp dissection, muscle is well exposed on either side of paired lip. *C*, three whipping stitches are applied which pass through skin and muscle and take off tension from fine skin sutures. *D*, repair completed.

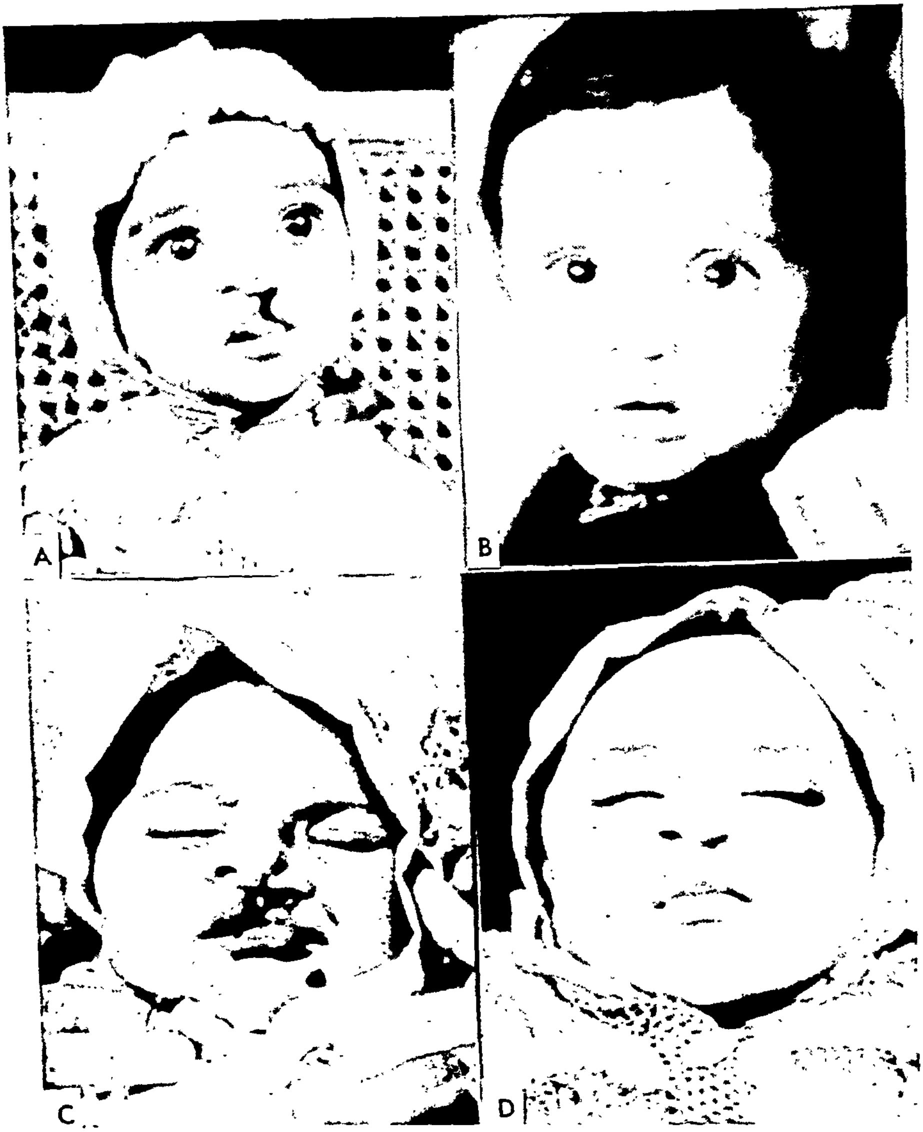

Fig. 2.—*A*, unilateral complete cleft lip with associated deformity of nose. *B*, result after simple closure. Nasal deformity corrected. Lip with midline tubercle and acceptable appearance on tenth postoperative day. *C*, complete unilateral cleft with marked deformity. Ala on affected side flattened out and with wide gap in lip. *D*, condition corrected (twelfth postoperative day). Nostrils nearly symmetric. Closed lip has normal length.

nancy, and a lowered incidence if the mother was given adequate vitamins.

All this experimental and clinical evidence, it should be noted, has important bearing on the problem of marriage, family planning and maternal care. Proper and adequate food rich in vitamins, the maintenance of sound health, and the avoidance of harmful drugs, at least in the first three months of pregnancy, may be helpful to some extent in the prevention of this anomaly.

A child with cleft lip represents a problem for the parents as well as for the plastic surgeon. The horrifying appearance of the child, with its attendant psychic trauma, is distressing to the parents. The functional inability of the infant to suck the breast is a pressing and urgent problem from the very moment of birth.

Early closure, soon after birth, allows the mother opportunity to exhibit her baby without apology. It helps to control respiratory infection in the infant and makes the feeding easy for both baby and mother.

I prefer to operate on the baby soon after birth, using local anesthesia. Any infant weighing 5 pounds (2,721.5 Gm.) or more will tolerate the operation well during the first few days after birth. The results of early closure in the children I have operated upon have been gratifying and impressive. After a well-executed early operation, subsequent growth tends to improve the result still further. Moreover, owing to early closure of the lip and the constant pressure it exerts, the alveolar arches are compressed into approximately the normal position by the time the baby is a year old.

Although the lip is closed immediately after birth, any associated cleft in the palate is postponed, to be dealt with later.

Before closure of a cleft lip is attempted, it will "pay good dividends" if the defect in the individual case is thoroughly studied, with attention to the extent of the gap, the shortage of tissue in both the vertical and the horizontal axis, the unequal thickness and altered configuration of the vermilion border, the distortion and deviation of the nasal tip, the obliquely bent columella and the flattening of the affected nostril.

No two cases of cleft lip are alike; each presents its own individual problem. It is necessary, therefore, to form a suitable plan of operation in every case by choosing one of the well-known procedures, adequately modified and modifying it sufficiently to meet the individual requirement. It is my experience and that of many other plastic surgeons that a simple, uncomplicated type of closure, well executed, often gives better and more pleasing results than a poor attempt at geometric exercises. In many cases I have closed the cleft lip with satisfactory results by a simple technic, to be described in this article.

Although innumerable procedures have been suggested for this purpose, Mirault[8] was perhaps the first to utilize the lining of the vermilion border, thus improving the appearance of the lip as compared to the results of older methods. His method also provided the basic principles for various modern procedures. His object was not only closure of the lip but correction of all the deformities around it—for example, the deviation of the nose, the flattened nostril and the shortness of the lip.

Brown and Blair[9] improved the Mirault technic and obtained better cosmetic results by normalizing the vertical length of the lip. Le Mesurier's technic,[10] based on the procedure of Hagedorn, provides a nearly perfect closure with a double curve of vermilion, as well as a midline tubercle in cases of incomplete cleft, in which the part of the lip on the cleft side can afford to provide the requisite rectangular flap.

Whatever type or method of closure is employed, it is of great advantage to have the plan for the individual case chalked out before starting the operation.

The infant is given its feeding an hour before the operation. Half an hour later 1/5 tablet (0.05 mg.) of Belladenal (a belladonna alkaloid) and phenobarbitone, 10 mg., are given. The child is placed in a cruciform position on a wooden frame

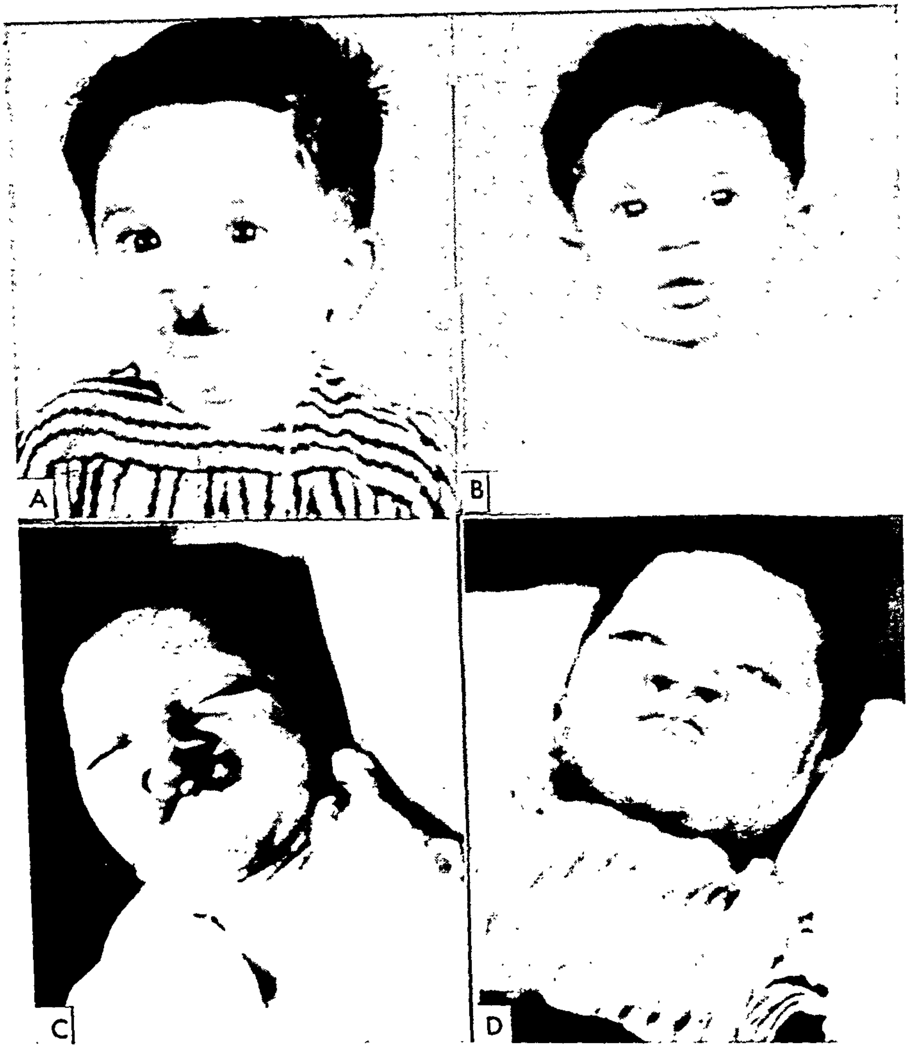

Fig. 3.—*A*, bilateral cleft lip. Complete on right side with deformed nostril. Incomplete cleft on left side. *B*, photograph taken on twelfth postoperative day. Pleasing result after one-stage closure. *C*, bilateral complete cleft lip and palate with gross deformity. Prolabium and premaxilla projecting, with ugly and frightening appearance. *D*, two weeks after primary one-stage closure with region under local anesthesia. Note normal length of lip and laxity available for forward growth of tip of nose.

similarly shaped, and crepe bandages are applied. A bandage or a strip of elastoplast around the forehead and the upper end of the vertical portion of the cross-shaped frame tends to steady the head to some extent; nevertheless, a nurse must sit at the head of the operating table to keep the head immobile.

The plan of operation and the important points are marked with sterile ink pencil on the cleft lip.

Infiltration with 2 to 4 cc. of 0.5 per

cent procaine hydrochloride is usually sufficient for local anesthesia.

Four mersilk guide stay sutures are applied: (1) at the tubercle on the base of the columella; (2) at the juncture of the alar base and the lip; (3) 2 mm. inside on the ridge above the red margin at the medial end of the cleft, and (4) 2 mm. outside the point at which the ridge on the lateral part of the lip begins to fade (Fig. 1*A*).

Incisions are made in the mucosa in the gingivolabial sulcus on either side of the cleft. By blunt dissection, with a plugget of gauze held in a fine hemostat, the necessary undermining is done, just sufficient to bring the margins of the cleft together without tension as judged by crossing the stay sutures to demonstrate the easy approximation. Bleeding is minimized by temporary packing with gelfoam and tiny pieces of gauze. Excessive undermining is to be avoided, as it causes unnecessary hemorrhage and needless damage to the maxillary periosteum and retards proper development of the facial contour.

In quite a few cases of the cleft lip the following simple procedure, if neatly executed, will give a pleasing result.

Stay sutures Nos. 2 and 4 are held under tension. A small curved incision is made at the alar end. By a sharp vertical cut the edges of the lip are paired down to the vermilion border, which in turn is cut at a right angle. By gentle treatment of the cut surface of the lip with sharp and blunt dissection, the muscle fibers in the middle of the raw surface are clearly defined. At the level of the vermilion border on the cut surface, the labial vessel is clamped for a few minutes to insure hemostasis. The other side is similarly treated.

It is to be noted that the vertical incision on the lateral side extends slightly outward just above the ridge, so that the distance between points 2 and 4 is equal to the distance between points 1 and 3.

The first suture approximates the ala of the nose to the tubercle at the base of the columella. The second approximates the ridge above the vermilion border in the lower part of the cleft. These sutures are not tied but are held by the assistant. A few fine catgut stitches are passed between the paired edges of the mucous membrane on the buccal side and are tied from above downward. Two or three whipstitch mersilk sutures are passed to approximate the skin and muscle. This permits the muscle to unite well, with a minimum of fibrous tissue. A few mersilk cuticular sutures are applied to complete the closure. The vermilion border is sutured either by overlapping or by wedging, to eliminate the possibility of notching.

The repaired lip is covered with tiny pieces of penicillin Tullae. The tension on the suture line is taken off by a long, thin strip of elastoplast applied over the closed lip, extending from one tragus to the other. The Logan bow is not used, because it hardly serves the purpose it was meant for.

Feeding is started soon afterward. The mouth of the infant is rinsed with penicillin solution poured through a dropper after each feeding. At least once daily the nostrils are cleaned with tiny cotton swabs.

The sutures are gradually removed between the fifth and the ninth day, depending upon the amount of good healing and repair. The whipstitches are removed on the twelfth.

In cases of bilateral cleft an early operation is of great advantage, since in the newborn the protruding premaxilla, with its prolabium, can be pushed back with gentle but firm pressure, and the constant pressure of the closed lip helps in the proper development of the face. If early operation is performed there is no need for damaging procedures like wedge resection of the vomer or wiring of the maxilla.

In a case of double cleft, although the lateral lip and alar segments are undermined and then paired as aforedescribed, nothing is done to the philtrum other than pairing its edges.

In the closure of bilateral cleft lip a small horizontal cut is added to the lateral segments of the paired lip. This provides two small flaps that join under the prolabium.

ZUSAMMENFASSUNG

Es wird ein Ueberblick ueber die aetiologischen und embryologischen Grundlagen der Hasenscharte gegeben.

Es wird eine einfache Technik zur Schliessung einseitiger und doppelseitiger Hasenscharten dargestellt. In vielen Faellen wird ein einfacher paariger Schliessungsvorgang bevorzugt.

Es wird sehr empfohlen die Schliessung sofort nach der Geburt unter Lokalanaesthesie vorzunehmen, weil dadurch gute kosmetische Resultate and eine gute Entwicklung der Gesichtsstrukturen erzielt werden.

RIASSUNTO

Viene trattata l'etiologia e l'embriogenesi del labbro leporino e viene descritto un metodo semplice di plastica per le forme unilaterali e bilaterali.

Si raccomanda la cura chirurgica immediatamente dopo la nascita, in anestesia locale; si ottengono ottimi risultati dal punto di vista estetico.

RESUMEN

Se revisan los fundamentos etiológicos y embriológicos del labio leporino. Se presenta una técnica sencilla para el cierre del labio leporino uni o bilateral. En muchos casos es preferible una simple aproximación.

Se aconseja insistentemente el cierre inmediatamente después del nacimiento bajo anestesia local ya que este método proporciona buen resultado cosmético y conduce a un desarrollo normal del área facial.

RÉSUMÉ

L'auteur rappelle les facteurs étiologiques et embryologiques de la fissure labiale.

Il présente une technique simple de suture pour les fissures uni- et bilatérales. Il donne la préférence, dans de nombreux cas, à une méthode conjuguée simple de réparation.

Il recommande vivement la suture immédiatement après la naissance, sous anesthésie locale, qui donne de bons résultats cosmétiques et permet un développement normal de la région faciale.

SUMARIO

Faz uma revisão historica dos fatores etiologicos da fissura do labio. Apresenta uma tecnica simples de sutura do labio leporino uni e bilateral, preferindo, em muitos casos um metodo duplo de fechamento da fissura. .Opera logo apos o nascimento, com anestesia local porque ontem melhor resultado estetico e permite um melhor desenvolvimento da face.

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Man mentally is everywhere in the universe, but physically he is bound only to one spot on earth at a time. All changes in the relation of man to space affect the very roots of his life. Man has adapted himself to his environment and has arranged his life basing it on distance and space. Ironically, technology has abolished distances and thrown man into the vertiginous whirlpool of an age in which, in order to conquer space, he has destroyed his own philosophic and physical stability. Motion sickness is a penalty for man's spatial restlessness.

The sensation of man's position on earth is physiologically located in three sensory organs: the vestibular apparatus, the sight organs, and the proprioceptive system. Orientation, coordination, and regulation of all these organs are indispensable in the maintenance of equilibrium. As DeWit has stated,[2] the sense of equilibrium is connected with the inertial system of the earth. The principal function of the vestibular apparatus is to register at all times the position of the body on the earth. Equilibrium in the human being is maintained by collaboration between the vestibular organ, the proprioceptive system, and the muscular system.

Any number of examples would bear out these basic principles. A person without labyrinths would drown if thrown into water. Skaters gliding through a thick mist on a frozen lake would trace circles indefinitely if they lost their spatial orientation. A dove without labyrinths cannot fly; and if its eyes are bandaged, it will return to earth.

Motion sickness occurs when there are disturbances of the vestibular function along with kinesthetic and psychologic alterations. Irritation of the vestibular apparatus produces nausea and vomiting, and destruction of this apparatus causes total immunity against swing sickness. Such disorders are also caused by disturbances in visual orientation, for instance, when the horizon seems to move as a result of the movements of a plane or a ship. The common denominator of all motion sickness is the exposure of the human being to angular, linear, or radial accelerations.

—*Marti-Ibañez*

Bronchography

GERT B. BIENIAS, M.D., F.I.C.S.

GIESSEN, GERMANY

IN 1904 P. Martin of Lyon, France, wrote a thesis on the use of Lipiodol as treatment for certain bronchial infections. C. Jackson in 1918 insufflated opaque substances (bismuth powder) through a bronchoscope and demonstrated the larger bronchi on a roentgenogram. The suitability of iodized oil as contrast medium for bronchographic study was first reported by Siccard and Forestier (France) in 1921.

Bronchographic study has a significant diagnostic value in the management of diseases of the tracheobronchial tree. The author summarizes the indications and contraindications, which are generally the same as for bronchoscopic study. The preoperative medicaments used for children and for adults are listed, and several anesthetic technics are described, as are instillation of the contrast medium and positioning of the patient. In the author's experience the best bronchograms have been obtained by using an aqueous suspension of Dionosil. It is advised that bronchoscopic study precede the taking of bronchograms, since direct filling of one lobe or one segment can then be done in a single session.

Indications.—Some of the main symptoms which would commonly indicate bronchographic investigation are persistent cough, wheezing and hemoptysis. These symptoms are indicative for diagnostic bronchoscopic study as well, which is performed routinely today with a great safety range and little discomfort for the patient; this was discussed in a separate paper. Most chest physicians agree upon the performance of bronchoscopic prior to bronchographic examination as part of the work-up of patients with thoracic symptoms. A bronchogram may be obtained immediately after bronchoscopic study or on the following day, as a separate procedure. A partial obstruction of a main bronchus or its larger divisions is often not demonstrated by a bronchogram but is visualized bronchoscopically. On the other hand, more peripheral changes of the bronchial tree may be demonstrated only by bronchographic means. The following indications for bronchographic study are as follows:

1. Clinical diagnosis of bronchiectasis to determine its kind and extent.
2. Suspected nonopaque foreign bodies.
3. Broncho-stenosis or obstruction from any cause, with or without roentgen signs of obstructive emphysema or atelectasis.
4. Malformations or deformities of the tracheobronchial tree.
5. Examination of rest cavities, with or without fistula, after empyema.

From the Department of Oto-Rhino-Laryngology, the Long Island College Hospital, and the Division of Otolaryngology, Department of Surgery, State University of New York, Downstate Medical Center, Brooklyn.

Submitted for publication Dec. 12, 1958.

6. Postoperative studies after pneumonectomy, lobectomy or segmental resection.

7. Cystic lesions of the lung and abscesses of various portions.

8. Tuberculous patients. Many patients have bronchiectasis or scarstenosis. (Caverns might not be demonstrated because of lack of suction in the cavity.)

Contraindications.—The procedure is contraindicated for (1) patients in poor general condition; (2) patients with iodine hypersensitivity (sensitivity test with potassium iodide the day before bronchographic study), and (3) patients with an acute infective or an acute asthmatic episode.

Fundamental Principles for Obtaining a Good Bronchogram.—First, adequate anesthesia should be employed. Second, delay between the injection of the contrast medium and the taking of the roentgen film should be avoided.

Important Factors.—Observation of the following points is of great importance:

1. The airway should never be obstructed.
2. The anesthesia should be adequate to permit injection of the contrast medium under fluoroscopic control without cough or other interference by the patient.
3. There must be no fire hazard when explosive anesthetics are used.
4. Aspiration of secretions and contrast medium from the bronchial tree should be possible.
5. A spot film technic should be used to permit instantaneous recording of the bronchographic picture in addition to the routine films taken after filling is complete.

Premedication.—For adults, a test tablet or 5 to 10 drops of saturated solution of potassium iodide is given *per os* on the day prior to bronchographic study, to rule out sensitivity. Postural drainage is ordered if no aspiration bronchoscopic procedure is done.

The bronchographic procedure can be performed at any time of the day provided the patient has been fasting for a minimum of three hours.

To the average patient is given codeine sulfate, 30 to 60 mg. (½ to 1 gr.) with atropine sulfate 0.4 mg. (1/150 mg.), together, hypodermically. Seconal or Nembutal, 100 mg. (1½ gr.) perorally is given about forty-five minutes before the procedure. If there is a history of any allergy, ACTH, 40 units, is given the evening before and in the morning to nontuberculous patients. For tuberculous patients, Benadryl, 50 mg., is substituted.

For infants and children the following rules apply:

1. All patients should be hospitalized.
2. Postural drainage is needed if no aspiration is done by bronchoscope.
3. No preparation or anesthesia is given when severe obstructive symptoms are present, only omission of feeding and fluids for four hours prior to the procedure.
4. Atropine should be given in appropriate doses forty-five minutes to one hour prior to anesthesia. Children over 1 year of age may be given a barbiturate combined with atropine one hour before anesthesia, except when Avertin is used. No morphine or scopolamine is used, since both have a depressing effect on respiration that varies widely in degree and is unpredictable.

Anesthesia.—Anesthesia is desirable in all cases to abolish the cough reflex during filling of the tracheobronchial tree. Cough during injection of the contrast medium, in children as well as adults, will spread the dye into the alveoli and result in a "snowstorm" effect on the roentgen film. This obliterates the finer details of the tracheobronchial tree in most instances.

For adults, topical anesthesia is used.

It is applied (1) in the ENT examining room if located close to the roentgen department; (2) in the roentgen department, (a) orally, with the patient sitting on the roentgen table; (b) through the cricothyroid membrane, with the patient lying on the table, or (3) in the operating room. After the procedure a little more anesthetic is instilled through the bronchoscope.

Technic.—Step 1: The patient's throat is sprayed, and the floor of the nose is anesthetized with a long cotton pledget soaked with anesthetic. After a few minutes' rest the gag reflex is abolished. The patient is instructed to hold his tongue out by catching its tip with gauze to prevent slipping, while with the other hand he holds an emesis basin into which he may expectorate. Under indirect laryngoscopic vision (mirror in left and syringe in right) the anesthetic is injected into the larynx and through the glottis with a curved laryngeal cannula; 0.5 to 1 cc. three to five times with at least one-minute intervals. To obtain good bronchial anesthesia, the patient is tilted to the right and left side and told to breathe deeply; even if one side only is to be examined, because many times a little contrast medium will enter the opposite bronchus and cause a disturbing cough reflex. Fractionated administration and avoidance of soaking the patient in anesthetic is safest and will provide the best anesthesia; the entire anesthetic procedure should take about ten to fifteen minutes. Then a No. 12 to 16 French catheter is introduced through the nose into the hypopharynx. Under mirror guidance the catheter, which slides straight down the posterior pharyngeal wall, is easily directed through the glottis into the trachea. Introduction of the catheter can also be done through the mouth, with the aid of a stylet or a curved forceps, in which case, of course, the nose does not have to be anesthetized. For anatomically difficult patients th an epiglottis retractor or a lary may be necessary. If such aid is able, the second and middle fing left hand of the physician are the posterior pharyngeal wall of tient, with the fingertips at the the arytenoids. With the right catheter then is pushed down will slide between the two fing into the larynx. Placing the ca to 2 inches (2.5 to 5 cm.) below cords is sufficient for the time. T the catheter is then taped to th the patient's face.

Whether the catheter is in th can easily be tested in one of the ways:

1. The patient's voice is hu breath sounds are audible thr catheter.
2. The outside end of the ca dipped into a glass of water, expiration causes bubbling.
3. The catheter glides easily t within the trachea, but not in th gus.
4. With the patient's mouth closed, a small piece of cotton pl the end of the catheter will w breathing.

Now the patient is ready to be to the roentgen department in chair.

Step 2a: The same procedure scribed is performed in the roo the bronchogram is to be take necessary equipment is available

Step 2b: Percutaneous punctu trachea through the cricothyr brane is no longer frequently p The patient is placed on the roent as if for tracheotomy. With a hy needle, a local anesthetic (1 per caine hydrochloride) is applied t of the cricothyroid membrane. T brane is then punctured with heavy needle and the topical anesthetic applied, and after a little while the contrast medium is injected through it into the trachea. This is not without danger, because infiltration of the soft tissues of the larynx may occur, resulting in more or less laryngeal swelling, which leads to respiratory obstruction and may possibly necessitate tracheotomy. After injection of the anesthetic the patient will cough and swallow (this causes up-and-down motion of the larynx), and, since injecting the contrast medium sometimes requires some force, the needle may slip out of the laryngeal lumen into the submucosal tissue.

Step 3: If the patient undergoes bronchoscopy prior to bronchographic study and if a portable or installed roentgen unit is available in the operating room, the contrast medium can be injected into the bronchi directly. This is usually done through a bronchial aspirating tube, after which the bronchoscope is removed and the patient positioned to complete the filling, and the films are taken. If the patient has to be moved to the roentgen department, the bronchoscope is removed and a catheter placed into the trachea through a laryngoscope.

Anesthetics.—The anesthetics used are the same as those for bronchoscopic study, namely cocaine, Pontocaine, Xylocaine or Cyclaine. Cyclaine 5 per cent is used in our hospital. The addition of epinephrine is not advised. The throat is sprayed lightly three or four times to abolish the gage reflex; then 3 to 5 cc. (1 cc. at a time, with at least one-minute intervals) is injected through the laryngeal cannula. The hypertonic anesthetics are much more likely to produce cough than are the contrast media. Administration of large or unsafe doses is therefore not necessary: a more uniform and diffuse distribution throughout the tracheobronchial tree is desired. In some hospitals the swab method of surface anesthesia is preferred for the pharynx and larynx anesthesia. By means of cotton wrapped around the tip of a curved forceps and soaked with the solution (about 3 cc.), the throat is swabbed step by step: the tongue, the palatal arch, the mesopharynx, the base of the tongue and the piriform sinuses. Introduction of anesthetic into the piriform sinus results in sufficient anesthesia of the sensory superior laryngeal nerve, which runs immediately beneath the mucosa. It is wise to keep 1 cc. of anesthetic solution handy for injection through the catheter shortly before installation of the contrast medium.

For children, with few exceptions, general anesthesia is used, as follows:

1. Avertin, 80 to 100 mg. per kilogram of body weight, per rectum.
2. Vinyl ether (Vinethene), induction being followed by drop ether.
3. Drop ether only, for very young infants.

The desirable stage is that in which the cough reflex is held in abeyance for about five minutes. The ideal is that in which the child's cough reflex returns when the contrast medium is aspirated after the procedure.

Sequence of Procedures.—Bronchoscopic examination and aspiration of the bronchial secretions should be routine before bronchographic study. With the bronchoscope in place, the contrast medium can be injected through an aspirating tube as in the adult. The bronchoscope may be left in place, so that as much as possible of the contrast medium can be aspirated after the procedure. Positioning the child with the bronchoscope left in the trachea is not the ideal; therefore, a flexible endotracheal tube is inserted after removal of the bronchoscope. A metal Y tube permits continuation of anesthesia or administration of oxygen, if necessary, through one limb. The catheter or, better, a polyethylene tube, for instillation of the contrast medium is inserted through the other limb. Aspiration of the contrast medium after bronchographic study is performed through the endotracheal tube.

Instruments.—A standard bronchogram tray should contain (1) a pack of 4 by 4 inch (10 by 10 cm.) sponges; (2) one emesis basin; (3) a medicine glass; (4) topical anesthetic solution; (5) a spray; (6) a 5 cc. syringe for the topical anesthetic; (7) a laryngeal mirror; (8) a curved laryngeal cannula; (9) a catheter with stylet; (10) a 20 cc. syringe for injection of the contrast medium, and (11) 20 to 30 cc. of the contrast medium. No. 12 through 16 French catheters are most commonly used. For lobar or segmental bronchograms, No. 15 or No. 19 Métras catheters with tips of different curvature (straight, semicurved, deeply curved and double-curved) are used. Introduction of those is done under fluoroscopic guidance. The catheters should be sterilized in solution and should not be boiled. For children. polyethylene tubes are preferred.

Contrast Media.—Many clinics use the iodized poppy seed oil (trade name Lipiodol) that contains 40 per cent iodine. If swallowed, it may liberate free iodine on digestion in the intestine, so that manifestations of iodism, usually mild and of short duration, may be seen. Delayed uticaria is occasionally observed. Histologic changes consisting of microphagic response are considered reversible and of little consequence in most cases. Occasional lipoid pneumonia and iodized oil granulomas have been reported. The elimination of Lipiodol takes weeks to months. Interpretation of subsequent films and evaluation of underlying lesions will therefore be hindered. Inadequate bronchograms cannot be replaced by repetition in less than a week to a month, which delays operation in many instances.

Search for a medium that would be more rapidly eliminated and elicit a minimum of tissue response led to the aqueous products Umbradil viscous B (Sweden) and Ioduron B (Switzerland). These media are markedly hypertonic, causing bronchial irritation and resultant cough (more than Lipiodol); also, the bronchograms are no more informative than are those obtained with iodized oils.

An *isotonic* suspension is the preparation known as Dionosil-aqueous. A 50 per cent suspension of propyliodone is combined with Natrium-Carboxylmethyl cellulose as a viscosifying agent, Natrium-Citrate as a buffer, Natrium-Chloride to render the suspension isotonic, and a small amount of benzyl alcohol as a bacteriostatic. An oily suspension of the same substance, Dionosil-oily, is available in 60 per cent concentration, with arachis oil as the vehicle. Elimination of that portion which is not aspirated or expectorated occurs by hydrolysis, presumably enzymatic. The products of hydrolysis are excreted by the kidneys without further decomposition, so that iodism does not occur, and unfavorable effects due to iodine or iodine absorption need not be anticipated. Elimination usually does not require more than three days, or a little longer for the oily preparation. A surgical specimen removed 3 to 49 days after bronchographic study did not reveal any histologic changes attributable to the contrast medium, except for simple phagocytosis in either diseased or nondiseased areas. Although aqueous Dionosil penetrates well into the small peripheral bronchi, there is little tendency toward alveolar filling, so that as much as twenty minutes may be allowed for instillation and fluoroscopic observation if desired. Clinically, no toxic effects are reported. Occasional elevation of the temperature to 100 F, which is also observed after bronchoscopic or Lipiodol bronchographic study, has no great importance. Dionosil-oily requires somewhat less topical anesthesia, but there is a greater tendency for alveolar filling, according to survey reports from the Jackson Clinic.

Only that part of the tracheobronchial tree should be filled in which pathologic change is suspected. When the site of disease has not been determined, the entire tracheobronchial tree may be filled, except in patients with marked reduced vital capacity and infants and small children, in which circumstances only one side is filled at the time. Some clinics prefer simultaneous filling of both bronchial trees even in children. The amount of contrast medium varies: about 15 cc. of Dionosil or 10 cc. of Lipiodol is required to fill one lung of an average adult. For children, the amount needed for unilateral filling increases with the size of the patient. For the newborn, 1 cc. will result in enough filling of the entire tracheobronchial tree for a satisfactory bronchogram. An additional 1 cc. or more may momentarily bring the baby into respiratory distress. For unilateral filling in a 1-year-old child, 5 cc. is usually needed.

Positioning and Filling.—Introduction of a contrast medium should always be done under fluoroscopic guidance. As for the opinion that the medium must be injected quickly and the pictures taken right away, this is true to some extent with Lipiodol, but not with Dionosil. As a matter of fact, slow injection of Dionosil is suggested, because this coats the bronchial mucosa more evenly. First, under fluoroscopic guidance, the catheter that was placed in the upper part of the trachea is introduced into the bronchus to be examined, and the patient is positioned at the same time. If only one lobe or segment is to be filled, 4 cc. is sufficient. This should only take a few minutes. For demonstration of the entire tracheobronchial tree, the catheter is left in the trachea and the patient is moved around while the contrast medium is injected. In ten to fifteen minutes the entire lung is filled and well mapped out.

Before injection the medium should be shaken thoroughly and warmed to body temperature. It is transferred into a 20 cc. syringe, which then is attached to the catheter. About 1 cc. is injected first in order to demonstrate the position of the catheter tip if it is nonopaque. With the patient breathing deeply, the filling should be carefully observed by the roentgenologist, because it may give important clues as to impaired mobility, rigidity, small filling defects, etc., in the tracheobronchial tree that cannot be seen on films obtained later. The fluoroscope should be loaded so that spot or serial films can be taken at any time during the filling. While the contrast medium is injected by an assistant, the patient is positioned under fluoroscopic observation by the roentgenologist. In this way most complete bronchograms are obtained.

In some clinics the contrast medium is injected through a laryngeal cannula or through the cricothyroid membrane, the patient being inclined toward the side to be filled. Then the films are taken. This, of course, does not always result in good bronchograms.

In children, if bronchographic study cannot be done under fluoroscopic guidance, a good unilateral bronchogram may be obtained by just rolling the child to the side to be examined. The tube, through which the contrast medium is injected slowly, is placed into the lower trachea. If the child breathes deeply and quietly, the bronchial tree will be well filled within about three minutes. The contrast medium is sucked into the bronchi and their main branches on inspiration, and no further positioning is required. Adequate filling of the bronchi in the adult is accomplished by proper positioning, which in turn depends on accurate knowledge of the segmental anatomic picture.

To obtain a bronchogram of the *right lung*, the tip of the catheter is located in the lower part of the trachea, since the orifice of the upper lobe is at the level of, or only a few millimeters distal to, the carina. The contrast medium is injected with the patient in the right lateral decubitus position and the left shoulder slightly backward, as the upper lobe bronchus of the right lung arises from the posterolateral aspect of the main bronchus. As the contrast medium enters the right upper bronchus, the patient is rotated forward and then backward, to fill the anterior and posterior segments, and the table is put into the Trendelenburg position to favor filling of the apical segment. Once the bronchi of the upper lobe are filled, the patient raises himself by resting on his right elbow, and his left shoulder is brought forward for the filling the bronchus of the right middle lobe, as this arises from the anterolateral aspect of the right intermediate bronchus. The left shoulder is brought posteriorly for the filling of the superior segment of the right lower lobe, which arises from the posterolateral aspect of the right lower lobe bronchus. If the sitting position is used, the patient assumes a 45-degree angle of anterolateral or posterolateral inclination for the respective filling of the right middle lobe and the superior segment of the lower lobe. The basal segments by this time are usually well outlined by the medium that has flowed down while filling the upper portions of the lung.

Positioning for a bronchogram of the left lung is the same as for the right with the exception of the filling of the left upper lobe bronchus. This arises from the anterolateral aspect of the main bronchus and about 2.5 cm. distal to the carina; therefore, the tip of the catheter can be placed into the orifice of the left main bronchus. The patient is first placed in the left lateral decubitus position with the right shoulder forward; this will fill the anterior segment of the upper division of the left upper lobe and partially the lower division (lingula); the shoulder is then brought backward and the head of the table lowered (Trendelenburg) for the filling of the apical-posterior segment. Some say slight coughing will not result in dispersal of contrast medium and spoilage of the bronchogram; a slight cough may even facilitate the progression of the dye along the bronchi. In my experience, however, once coughing occurs it can rarely be controlled well enough to allow completion of the examination. Some of the contrast medium is brought up on coughing and then swallowed, so that it can be seen in the esophagus on the roentgen film. This should be avoided.

When both lungs are filled, anteroposterior (preferably stereoscopic), right and left oblique and both lateral views are taken.

Filling of an Individual Lobe or Segment.—For filling of the right upper lobe the tip of the catheter is introduced into its orifice, the patient is placed in the right lateral decubitus position, with the left shoulder first inclined backward for filling of the posterior segment and part of the apical segment; then with the left shoulder rotated forward for the filling of the anterior segment. In the latter position, more of the contrast medium usually finds its way into the apical segment. Similarly, the left upper lobe is filled with the tip of the catheter in its bronchial orifice and the patient placed consecutively in the dorsolateral and ventrolateral positions. The filling of the right middle lobe, the lower division of the left upper lobe (lingula) and the superior segment of the lower lobes does not require any particular positioning once the tip of the catheter is inserted into the proper orifice. It can be performed with the patient in the sitting position or in either dorsal or ventral decubitus.

After the roentgenograms have been taken the patient is immediately positioned for postural drainage, and cough is encouraged. He remains in this position for fifteen minutes, and the procedure is repeated three times a day for three days. When sent back to his room, the patient is instructed to take nothing by mouth for two hours (until the anesthesia wears off).

Pathologic Picture as Demonstrated Bronchographically.—Bronchiectasis is always associated with chronic bronchitis, infective, specific or asthmatic. The great amount of usually thick secretion in the tracheobronchial tree and the thickened mucosa make it difficult to apply topical anesthesia, and upon introduction of a contrast medium cough will occur and spoil the roentgen picture. Bronchoscopy and aspiration of the secretions, therefore, should be done prior to the bronchographic procedure, which may be done immediately thereafter. With the bronchogram in cases of bronchiectasis I like to demonstrate not only the type of ectasia (saccular, tubular or cylindric) but the extent and location, i.e., the segment involved, because many patients will undergo operation in the very near future thereafter. In children, bronchiectasis is frequently associated with tuberculosis and the ectasia usually occurs in the upper lobes. Extrinsic compression of the bronchi or infiltration by enlarged lymph nodes leads to atelectasis, thereby inducing dilatation.

Malformations of the tracheobronchial tree are also well demonstrated by bronchograms:

1. Accessory lungs (with a lobe of three segments off the trachea). Within these, bronchiectasis may be demonstrated.
2. Agenesis, aplasia or permanent hypoplasia of the lung, with or without tracheal stenosis. The bronchogram shows normal bifurcation and a short portion of a main bronchus.
3. Fistulas—usually esophagobronchial, of different types. In the newborn, however, 13 per cent of errors occur because some contrast medium is aspirated in swallowing, owing to the neuromuscular immaturity of the pharynx and esophagus and the low surface tension of the iodized oil. It is better to introduce a small catheter into the upper part of the esophagus, through which the contrast medium can be instilled.
4. Vascular anomalies. These are sometimes better demonstrated by esophagram. In any case of suspected anomaly, barium must not be used for the esophagram, because an esophagobronchial fistula may be present.

Complications Following Bronchographic Examination.—Toxic reactions to the contrast medium have been mentioned; also, episodes of toxic bilateral acute pneumonia are reported.

Toxic reactions to the anesthetic can occur and are usually overlooked in the darkened roentgen room until the patient produces convulsions.

Respiratory obstruction and death from asphyxia can occur if the patient has chronic pulmonary disease and the remaining respiratory areas are obstructed by the contrast medium. Contrast media of low viscosity, therefore, must be used, and aspiration must be performed through the inserted catheter immediately after the procedure.

ZUSAMMENFASSUNG

Die bronchiographische Untersuchung ist bei Erkrankungen der Luftroehre und des Bronchialbaumes von wichtigem diagnostischen Wert. Die Indikationen und Gegenindikationen, die gewoehnlich dieselben sind wie bei der Bronchioskopie, werden zusammengefasst. Die bei Kindern und bei Erwachsenen vor dem Eingriff

angewandten Medikamente werden aufgezaehlt, und verschiedene Betaeubungstechniken werden eroertert. Die Einfuehrung des Kontrastmittels und die Lagerung der Patienten werden im einzelnen beschrieben. Nach der Erfahrung des Verfassers ergab die Verwendung waessriger Aufschwemmungen von Dionosil die besten Bronchiogramme. Es wird empfohlen, die Bronchioskopie vor der Bronchiographie auszufuehren, weil auf diese Weise die direkte Fuellung eines Lappens oder eines Segments in der gleichen Sitzung vorgenommen werden kann.

RÉSUMÉ

Dans les affections de l'arbre trachéo-*bronchique, l'étude bronchographique* a une valeur diagnostique significative. Les indications et contreindications (en général les mêmes que pour la bronchoscopie) sont résumées. Les médicaments pour enfants et adultes sont cités, et plusieurs techniques d'anesthésie sont discutées. L'administration du produit de contraste et la position du malade sont décrites en détail. D'après l'expérience de l'auteur les meilleures bronchographies ont été obtenues au moyen d'une suspension aqueuse de Dionosil. L'étude bronchoscopique est recommandée avant l'examen bronchographique, car si cette règle est suivie, le remplissage direct d'un lobe ou segment peut être pratiqué en une séance.

RESUMEN

El estudio broncográfico tiene el mayor valor diagnóstico en los casos de enfermedades del árbol traqueobronquial. El autor resume las indicaciones y las contraindicaciones que habitualmente son las mismas que en el caso de la bronquioscopia. Enumera también los medicamentos usados en el preoperatorio para niños y adultos así como las diferentes técnicas antestésicas. Describe así mismo en detalle la técnica de la instilación del contraste y la posición del enfermo. Según la experiencia del autor, las mejores broncografías se obtienen con la suspensión acuosa del Dionosil. Se aconseja el estudio bronquiscópico antes del exámen broncográfico ya que, procendiendo así, puede rellenarse directamente un lóbulo o un fragmento en una sola sesión.

RIASSUNTO

In caso di malattie dell'albero tracheobronchiale lo studio broncografico si dimostra di grande importanza diagnostica. Vengono elencate le controindicazioni, che sono le stesse della broncoscopia; vengono inoltré indicati i farmaci da usare pre*operatoriamente nei bambini e negli adulti* e le varie tecniche di anestesia. Viene anche descritta dettagliatamente la posizione del paziente per la instillazione del mezzo di contrasto. Secondo la esperienza dell'autore i migliori broncogrammi si ottengono usando una sospensione acquosa di dionosil. E' opportuno fare lo studio broncoscopico prima di quello broncografico poichè se si segue questa condotta si può fare la iniezione diretta di un lobo o segmento in un unica seduta.

SUMARIO

Nos casos de molestia da arvore traqueo-brônquica, o estudo broncográfico tem um valor diagnostico significativo. São resumidas as indicações e contra-indicações, frequentemente as mesmas que para os procedimentos broncoscopicos. São relacionados os medicamentos pre-operatorios usados para crianças e adultos e muitas tecnicas de anestesia discutidas. Descreve com detalhes a instilação de meio de contraste e a posição do paciente. Pela experiência do A., as melhores broncografias foram obtidas com o uso de suspensão aquosa de Dionosil. Aconselha o estudo broncoscópico antes do exame broncográ-

fico, pois assim se consegue o enchimento diréto de um lobo ou segmento de uma só vez.

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Cystic Lymphangioma of the Mediastinum

JAMES GRAHAM, M.D., F.A.C.S., F.I.C.S.
AND GRANT JOHNSON, M.D.
SPRINGFIELD, ILLINOIS

A case of cystic lymphangioma, or hygroma, of the mediastinum is reported. This is an unusual condition, of which 23 operative cases are reported in the literature.

The pathogenesis of mediastinal hygroma is indicated, and the literature on the subject is discussed. These cystic tumors are compared with other benign vascular tumors and mesothelial cysts with which they may be confused.

LYMPHANGIOMA of the mediastinum is rare; 22 operative cases have been reported, and several instances based on autopsy material are on record. Thus, the volume of case material in the literature is still too small to convey a comprehensive picture of the condition. The cystic tumor in the case here presented was identified histologically as a cystic lymphangioma and was located in the right side of the mediastinum, above the azygos caval angle.

REPORT OF CASE

A 31-year-old man, an accountant, was referred to us on Nov. 14, 1956, for treatment of a mediastinal tumor. The condition had been discovered at mobile unit screening roentgen examination in December 1955. A smooth, homogeneous, well-outlined opacity was detected in the right superior mediastinal area. Observation was advised by the attending physician at that time, and follow-up roentgenograms were taken at intervals of two and three months. These showed slow but progressive enlargement of the dense area.

The patient was completely asymptomatic. His weight had been constant for four years. He had no cough or thoracic pain, and he was not dyspneic. There had been no alteration of voice or difficulty in swallowing.

The past history revealed no serious illness or injury or previous operations. There had been no exposure to tuberculosis. The family history revealed no carcinoma or diabetes.

Physical examination showed the patient to be healthy. His height was 6 feet and ½ inch; his weight, 175 pounds (79.4 Kg.). The temperature 98.6°F.; blood pressure 128/76; pulse 76. There was no evidence of Horner's syndrome, and the pupils reacted briskly to light. Laryngoscopic examination revealed normal motion of the vocal cords. The lungs were clear. The heart was of natural size, and no murmurs were heard. The veins of the head and neck were normal in size and appearance. There was no clinical evidence of mediastinal enlargement.

Roentgen examination confirmed the normal cardiac position and size. The trachea was not deflected. The lung fields were clear. A well-defined homogeneous opacity of moderate density was evident in the right superior mediastinal area. In the posterior-anterior view the mass was ovoid, with the slim diameter in the sagittal plane (Fig. 1). In the right lateral view the mass had a circular outline (Fig. 2). Fluoroscopic examination showed natural diaphragmatic excursion. The mass was not expansile.

Bronchoscopic examination gave completely negative results. The laboratory values likewise were within normal range: hemoglobin 14.5 Gm., red blood cells 4,250,000 and the white blood cells 7,850 per cubic millimeter, with a normal differential count.

With a preoperative diagnosis of mediastinal tumor, exploratory thoracotomy was per-

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Submitted for publication April 2, 19[illegible].

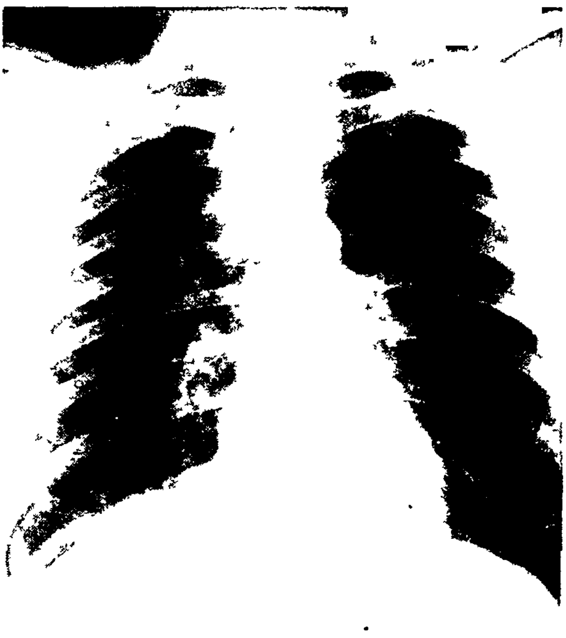

Fig. 1.—Posterior-anterior roentgenogram showing well-defined homogeneous opaque area is visible in right superior mediastinal area.

formed on November 29. The right hemithorax was exposed through a posterolateral approach after resection of the sixth rib. A smooth, shiny, fluid-containing cyst with a diameter of 3½ inches (8.9 cm.) was seen bulging from the superior mediastinum (Fig. 3). It was covered with mediastinal pleura, and its lower anterior margin occupied the azygos caval angle. The adhesions between the upper lobe and the mediastinal pleura were minimal; they were obviously pulmonary in origin, for there was no evidence of inflammatory reaction about the cyst. The vascular supply to the cyst was insignificant, and there was no attachment between the cyst and the trachea, the bronchus or the esophagus. Grossly the cyst was unilocular, except for a few knobby projections measuring up to 5 mm. in diameter. These small cavities contained clear fluid. The cyst was removed intact. Postoperative recovery was uneventful. The last follow-up examination was made on Sept. 2, 1958, at which time the patient showed no evidence of recurrence either by clinical or roentgen examination. He was asymptomatic.

The cyst weighed 46.9 Gm. Its maximum dimensions were 3 by 5 by 2.5 cm. Knobby secondary cysts projected from the surface of the main cavity. The cyst contained 46 cc. of clear amber fluid.

Histologic examination (Fig. 4) showed an inner lining of flattened endothelial cells. Just beneath the lining there was an irregular strip of dense tissue with smooth muscle fibers running in various directions. Within the wall there was a large amount of lymphoid tissue, and in this there were germinal centers. This histologic diagnosis was cystic lymphangioma.

Pathologic Features.—Lymphangiomas are tumors composed of lymph vessels, endothelial cells, supporting connective tissue and lymph follicles. They are essentially cystic and cavernous, being divided by septums that often contain fat cells and smooth muscle.[1] They represent malformations of the embryonic lymphatic buds that develop as projections from the venous system. In a sense, lymphatics are modified veins.[2] Capable of independent growth, these lymphatic masses are predisposed to enlarge into irregular cystic tumors.

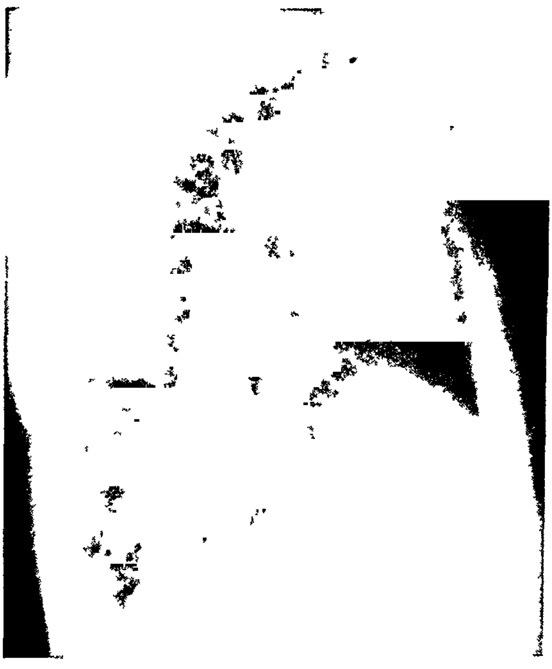

Fig. 2—Right lateral roentgen view showing ovoid outline of mass.

Although lymphangiomas occur most frequently in regions known to abound with lymphatic buds in the embryo, they also occur elsewhere. They are encountered most often in the cervical and axillary areas, close to the locations of the paired jugular lymphatic sacs of the embryo. Less frequently they arise in the inguinal and retroperitoneal areas as offshoots of the paired and unpaired abdominal lymphatic sacs. The best explanation of their occasional presence in the mediastinum is the migration theory postulated by Childress, Baker and Samson.[3] Sequestered lymphatic buds that fail to reestablish communication with the venous system may become attached to the esophagus and trachea and descend with these structures into the mediastinum; there they grow independently. Childress and his associates noted that the cysts described in 5 of 18 published reports were located at the triangle formed by the azygos vein, the superoir vena cava and the esophagus. The cyst in the case here presented occupied this position. The frequency with which cysts occur near the esophagus and trachea lends credence to the migration theory.

The comparatively high incidence of these tumors in the cervical area is illustrated by the fact that Gross and Goeringer[4] collected 225 cases of cervical cystic hygroma from the literature as long ago as 1939. A cervical hygroma may extend through the superior thoracic inlet into the mediastinum, producing a combined cervicomediastinal hygroma. These are unusual. Gross and Hurwitt[5] reviewed 19 reported cases in 1948.

Cystic lymphangioma is a term that is usually reserved for multilocular lymphangioma, but there is no need to make a distinction between the multilocular and the unilocular variety. Although the two differ in gross features, they have a common origin and a common histologic structure. In the recent literature on the subject the term "hygroma" is used in reference to both varieties.

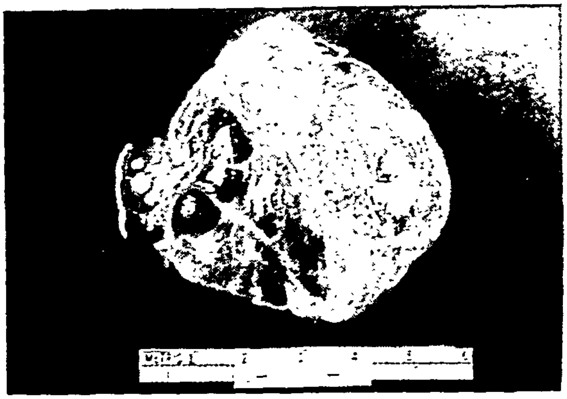

Fig. 3.—Photograph of gross specimen, a smooth, shining mass with fluid-containing spaces.

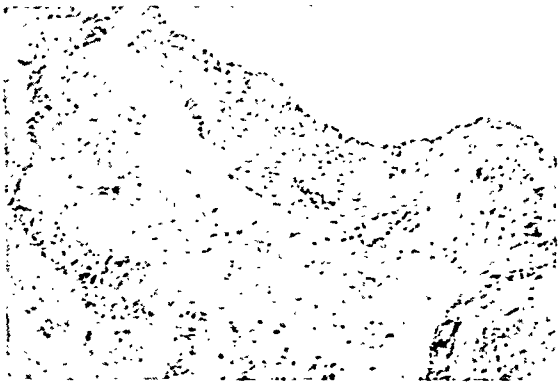

Fig. 4.—Section from periphery of tumor, showing flattened endothelial lining, smooth muscle fibers and lymphoid tissue.

The apparent difference between simple and complex cysts is due to the propensity of some cysts to form septums that divide a large cystic cavity into a variable number of compartments, large and small. Proliferating buds propagate from the walls of these individual chambers. Most of the septums are incomplete, as is demonstrated by the fact that a puncture in one area will often release fluid from a number of compartments or from all, causing collapse of the entire cyst. It is the degree of compartmentation that accounts for variations in the relations of the cyst to surrounding structures. A unilocular lymphangioma may be so loosely attached to contiguous structures that it can be shelled out with the finger. Complicated multilocular cysts, on the other hand, may weave in and out between adjoining structures so intimately that complete removal of the cyst may be impossible. Between the two extremes are all gradations of shape and attachment. The cyst in the case here reported, although multilocular, had not yet insinuated itself between adjacent organs and vessels and was handled surgically as a single cystic cavity.

Goetsch[6] offered an explanation for the intimate and complex attachment to regional structures that is characteristic of multilocular cysts. The individual compartments, enlarging by endothelial proliferation, expand along tissue planes between and around neighboring organs. As the endothelial buds open up into cysts, the vessels, nerves and muscles surrounded by the cystic prolongations are actually engulfed and appear to be crossing through the mass. The constriction of these engulfed structures may be so severe that they undergo atrophy and degeneration.

Review of Literature.—The first surgical resection of a cystic lymphangioma of the mediastinum is credited to Skinner and Hobbs.[7] This was a two-stage procedure performed in 1934. In 1948 Sanes, MacManus and Scatchard[8] added a case and reviewed 8 published cases, including both surgical and autopsy material. Gross and Hurwitt[5] reviewed the literature again in 1948, and added another case. Individual case reports since these[9] have brought the total of surgically resected specimens to 23, including the one in the case presented here. The most recent collective review of mediastinal cystic hygromas is that of Childress, Baker and Samson.[3] The condition is discussed briefly in most of the major reviews of mediastinal tumors and cysts.[10] Herlitzka and Gale[11] encountered no lymphangiomas in a review of 174 mediastinal tumors and cysts treated surgically at the University of Wisconsin Hospitals. Nelson, Shefts and Bowers[12] listed only 1 case of hygroma in a series of 141 mediastinal tumors and cysts.

Comparison with Other Vascular Tumors.—Lymphangiomas are not alone in respect to their rarity in the mediastinum. This is an unusual location for all benign vascular tumors, whether angiomas, hemangioendotheliomas, peritheliomas or lymphangiomas. In view of the fact that vascular tumors are not uncommon elsewhere in the body, it is striking that they are encountered so infrequently in the mediastinum.

Angiomas arise as embryonic sequestrations of mesodermal tissue, canalizing and establishing communication with a parent vessel. Usually there are both afferent and efferent vessels. In some, the endothelial lining cells proliferate to form solid areas. In others, heavy fibrosis and cellular partitions divide the tumor mass into numerous fluid-containing spaces. Hemangiomas appear as proliferations of endothelial cells about the vascular spaces, the most characteristic being a translucent polyhedral cell with a pale nucleus devoid of acidophilic nucleoli.[13] Occasionally there are malignant types, angiosarcomas. The literature contains reports of 23 angiomas and hemangioendotheliomas. Peritheliomas present numerous arterioles, each contained in a sheath of polygonal, rounded or stellate cells radiating from the vessels.[13]

Foot[14] stated: "The classification of these angiomatous tumors is convenient rather than important" because all vascular tumors have a common histogenesis, beginning essentially as sequestrations from the embryonic mesoderm. As they develop, canalization appears and then differentiation into endothelium, connective tissue, smooth muscle or adventitial tissue.

The cells in any of these layers may become neoplastic to set the pattern of the tumor. In some the endothelial cells may proliferate; in others the fibrous elements, and in still others the adventitia. The basic mesoderm may be arterial, venous, capillary or lymphatic.

While it is true that the histogenesis of all vascular tumors is similar, as surgical problems they differ one from another. A simple cystic lymphangioma, amenable to shelling with the finger, is removed more easily than an encapsulated but solid hemangioendothelioma. At the other extreme, a complex, multiloculated hygroma that ensnares muscles, nerve trunks and vessels like an octopus may defy resection.

Comparison with Mesothelial Cysts.—A certain type of cyst, thin-walled, unilocular, containing clear fluid and occurring most often at the cardiophrenic angle near the anterior chest wall, has been called mesothelial, pericardial celomic, spring water or serosal cyst. Some authors[15] place all nonadherent cysts containing clear fluid in this group; the existence of a unilocular cystic lymphangioma is doubted by them, and the term "hygroma" is reserved for complex multilocular lymphangiomas. Gross[16] takes an opposite view and classes all cystic lesions that contain clear watery fluid and are lined by endothelium as hygromas, regardless of where they occur in the thorax. Such distinctions are made on gross pathologic and clinical features and are not in accord with the embryonic development of structures within the thorax. Lymphangiomas and mesothelial cysts are readily differentiated histologically.

Two schools of thought on the development and pathogenesis of mesothelial cysts have been reviewed in considerable detail by Drash and Hyer.[17] Lambert,[15a] who first focused clinical attention on these cysts, looked upon them as abnormalities in the development of the pericardium, which begins in the embryo as a series of disconnected lacunae in the mesenchyme. The lacunae enlarge and merge to form the pericardial celom. If any fail to merge, an independent cavity or cyst is formed. Kindred[18] expressed the opinion that the cysts represent sequestrations from the primitive pleural cavities, which in turn are derived initially from the dorsal regions of the early embryonic pericardial cavity. Despite some disagreement over the details of development of mesothelial cysts, it is evident that their origin is quite distinct from that of the lymphangiomas.

ZUSAMMENFASSUNG

Es wird ueber einen Fall von zystischem Lymphangiom oder Hygrom des Mediastinums berichtet. Von dieser ungewoehnlichen Erkrankung gibt es dreiundzwanzig in der Literatur berichtete operierte Faelle.

Es wird auf die Pathogenese des mediastinalen Hygroms eingegangen, und die Veroeffentlichungen ueber diese Krankheit werden eroertert.

Diese zystischen Geschwuelste werden mit anderen gutartigen Gefaesstumoren und mit mesothelialen Zysten, mit denen sie verwechselt werden koennen, verglichen.

RESUMEN

Se presenta un caso de higroma o linfangioma quístico del mediastino. Se trata de un caso raro, pues hasta la fecha solo han sido publicados 23.

Se describe la patogenia del higroma del mediastino y se revisa la literatura. Estos tumores quísticos pueden ser comparados con los tumores vasculares benignos y quistes mesoteliales que se presentan a confusión.

SUMARIO

Apresenta um caso de linfangioma cistico ou higroma do mediastino. Este achado

raro se acha registrado em 23 casos na literatura medica.

Indica a patogenia e discute as referencias bibliograficas encontradas. Compara estes tumores cisticos com outros neoplasmas vasculares benignos e os cistos mesoteliais com que podem ser confundidos.

RIASSUNTO

Viene riferito un caso di linfangioma (o igroma) cistico del mediastino. Questa affezione è rara e ne esistono soltanto 23 osservazioni operatorie in tutta la letteratura. Viene indicata la patogenesi e il quadro della malattia, assieme alla diagnosi differenziale dagli altri tumori vascolari benigni coi quali può essere confusa.

RÉSUMÉ

Un cas de lymphangiome kystique ou hygroma du médiastin est décrit. C'est une affection rare dont on ne trouve que 23 cas opérés dans la littérature.

La pathogénèse est analysée, avec discussion des observations relevées dans la littérature. Ces tumeurs sont comparées à d'autres tumeurs vasculaires bénignes et aux mésothéliomes avec lesquels elles oeuvent être confondues.

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Section en Francais

5

D'un Cas de Goitre Aberrant Localisé dans le Médiastin Postérieur

(A Case of Aberrant Goiter in the Posterior Portion of the Mediastinum)

TARIK MINKARI, M.D., F.I.C.S.,[*] ET CEVDET TURAN, M.D.[**]

ISTANBUL, TURKEY

NEUS neus considérons très heureux d'avoir eu l'occasion de pouvoir observer et traiter chirurgicalement, avec succés, um cas de goitre aberrant localisé dans le médiastin postérieur.

En effet, la localisation intrathoracique d'un goitre est rare, máis elle est exceptionnelle dans le médiastin postérieur.

Observation:

M. M. Ergogan, 58 ans, originaire d'Afyon, est adüis dans le service chirurgical de l'hôpital Militaire de Sarayburnu, le 28/11/1958 (Prot. No.: 1209).

Il se plaint de toux, de dysphagie, d'asthénie et d'amaigrissement depuis un pois.

Il attribue son toux au tabac, étant fumeur depuis un grand nombre d'années. Malgré cette axcuse, il aveue que le caractère de sa toux changeait progressivement au cours des dernières mois et qu'il devenait plutet "quinteux."

De même, depuis cette date, il commence à ressentir une légère dysphagie rétrosternale, *surtout en avalant des bols alimentaires solides.*

Rien de perticulier à signaler dans l'antécédent personnel et familial.

It est asthénique de nature, pèse 63 kg., taille 1.60 m. Tension artérielle 13/8, le rythme du pouls est normal (84 pulsations à la minute)

A case of aberrant goiter localized to the posterior portion of the mediastinum is reported. Treatment was exclusively surgical. The postoperative course was without complications, with disappearance of certain preoperative associated symptoms, and the patient recovered and regained weight with satisfactory rapidity.

Examen sanguin:

Nombre des globules rouges:	3.200,000
Nombre des globules blancs:	7.700
Taux d'hémoglobuline:	65%
Vitesse de sédimentation:	51 mm./h.
Analyses d'urine:	Normale
Réactions de Casoni et Weinberg:	Négative
Métabolisme de base:	Augmenté de 15%

Examen radiologique:

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[*] Assistant professor, Third Surgical Clinic, Faculty of Medicine of Istanbul University, Istanbul; attending surgeon, Department of Thoracic Surgery, Sarayburnu Military Hospital, Istanbul.

[**] Surgeon, Sarayburnu Military Hospital.

Submitted for publication May 24, 1959.

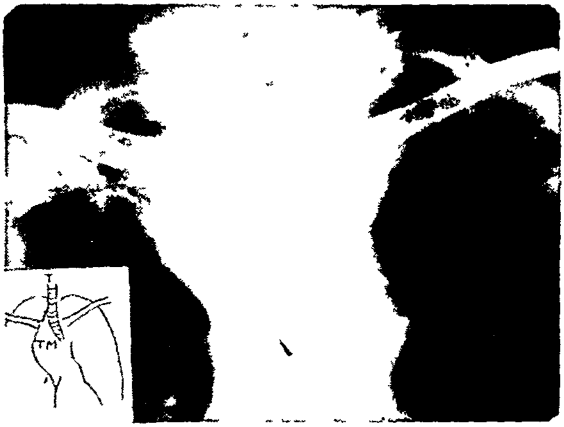


Fig. 1.—*T*, trachée; *TM*, tumeur.

On voit sur le cliché A.P. une opacité, localisé au niveau du médiastin supérieur, dont les parties supérieur, inférieure, médiane se superposent avec l'opacité médiastinale, mais dont la partie externe, saillant dans la cavité thoracique, est régulière, arrondie, homogène.

La trachée est légèrement comprimée et déviée vers le côté gauche (Fig. 1).

Au cours de l'examen radioscopique de l'oesophage sous diverses incidences, en utilisant une certaine quantité de sulfate de barium dilué, on a constaté que cette opacité evoide, parfaitement et régulièrement capsulée, nettement limitée des tissus environnant, siège verticalement dans le médiastin postérieur (Fig. 1).

Cette masse tumorale refoule en même temps légèrement le tiers supérieur de l'oesophage, de dernière en avant et de droite à gauche. Elle est immobile au cours des mouvement de déglutition et de respiratoir. Elle n'est ni battante ni expensive (Fig. 2).

L'examen bronchoscopique et oesophagoscopique ne rélève rien sur la nature de cette masse. Il montre seulement la compression et la déviation de ces tubes.

L'intervantion est pratiquée le 2/12/-1958.

Thoracotomie postéro-laterale droite par incision de Crafoord, résection sub-totale de la 4 ième côte.

La cavité pleurale est libre, le poumon, d'apparence et de consistance normaux, se laisse facilement récliner.

La masse tumorale, saillant partiellement dans la cavité thoracique, siège surtout à la partie supérieure du médiastin postérieur. Elle se trouve en avant et à droite des 2 ième, 3 ième, 4 ième corps vertebraux dorsaux, en arrière de l'artère anonyme, au dessous du tronc de l'artère sous clavière, au dessus de la crosse aortique et de la veine azygos, en arrière et à droite de l'oosophage et de la trachée.

La plèvre médiastinale qui recouvre régulièrement la partie externe de cette masse est lisse, mince, assez vascularisée. Elle est incisée verticalement et grâce à un bon plan de clivage, la plus grand partie de cette masse tumorale est libérée des petits vaissaux et des tissus conjonctifs environnants.

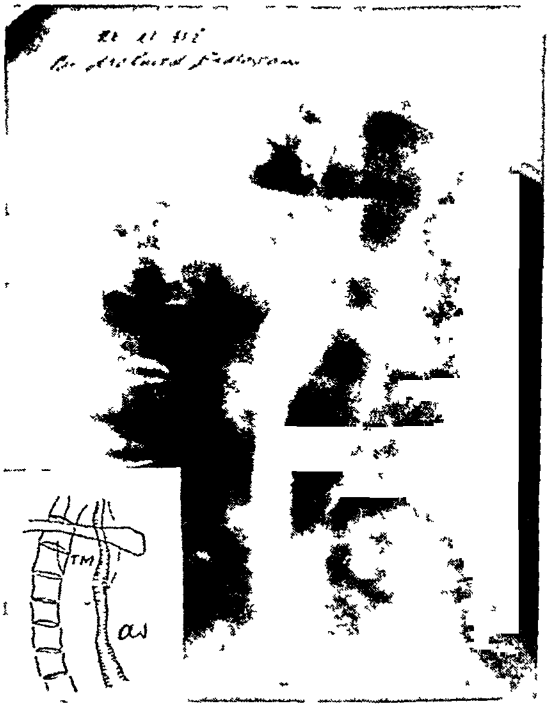


Fig. 2

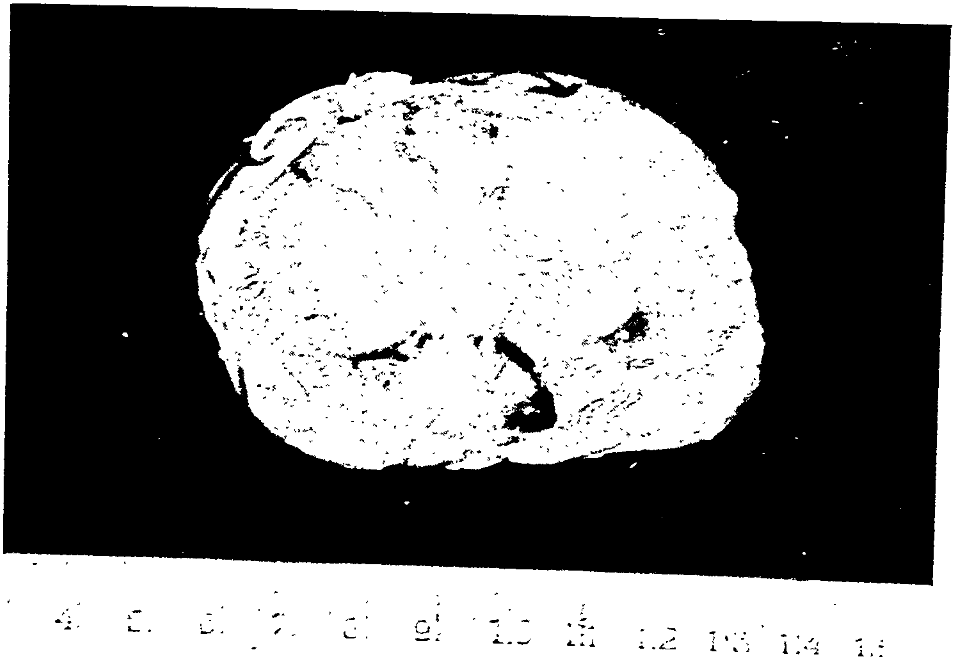


Fig. 3.

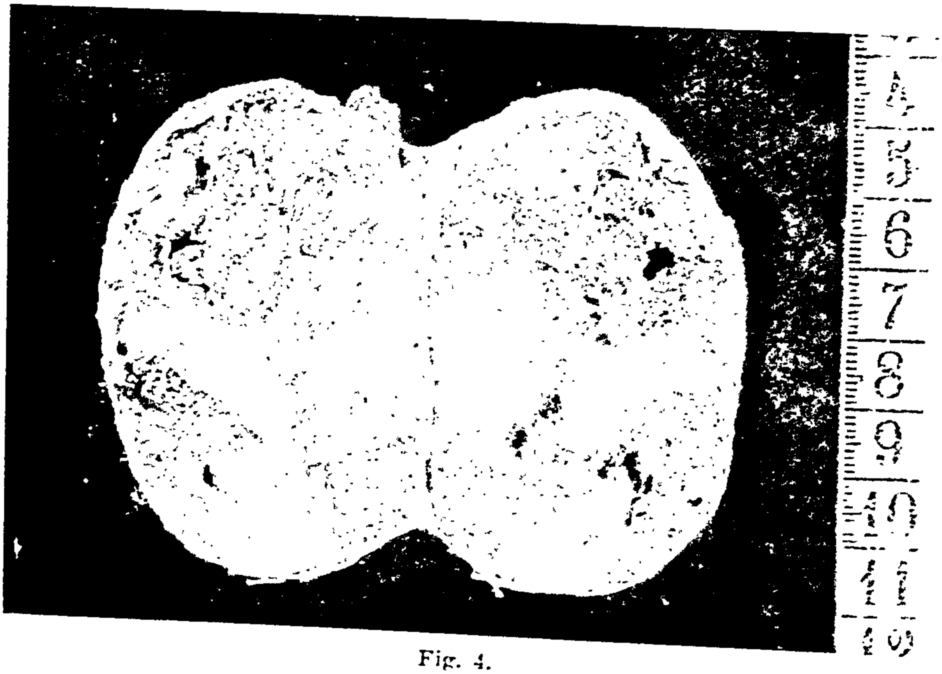
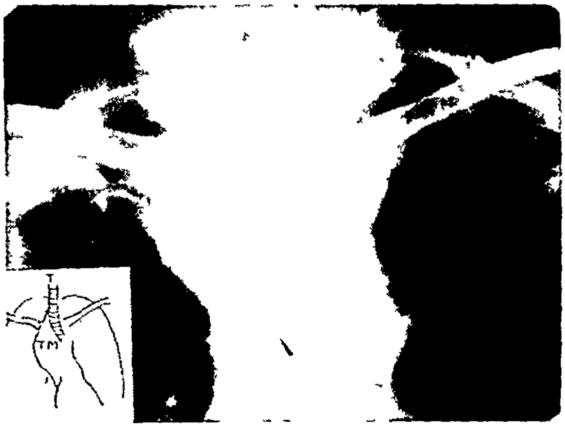


Fig. 4.

Mais, en ce moment-là, on a constaté
il existait une pédicule, contenant des
ères et des veines provenant des vais-
ux du 3 ième espace intercostal, qui
achait le pôle inférieur de cette masse
à la paroi thoracique. Cette pédicule a été soigneusement disséquée, ligaturée en deux points et sectionnée.

Ainsi l'on a totalement énucluée cette masse tumorale qui est de la grosseur



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La masse tumorale, saillant partiellement dans la cavité thoracique, siège surtout à la partie supérieure du médiastin postérieur. Elle se trouve en avant et à droite des 2 ième, 3 ième, 4 ième corps vertebraux dorsaux, en arrière de l'artère anonyme, au dessous du tronc de l'artère sous clavière, au dessus de la crosse aortique et de la veine azygos, en arrière et à droite de l'oosophage et de la trachée.

La plèvre médiastinale qui recouvre régulièrement la partie externe de cette masse est lisse, mince, assez vascularisée. Elle est incisée verticalement et grâce à un bon plan de clivage, la plus grand partie de cette masse tumorale est libérée des petits vaissaux et des tissus conjonctifs environnants.

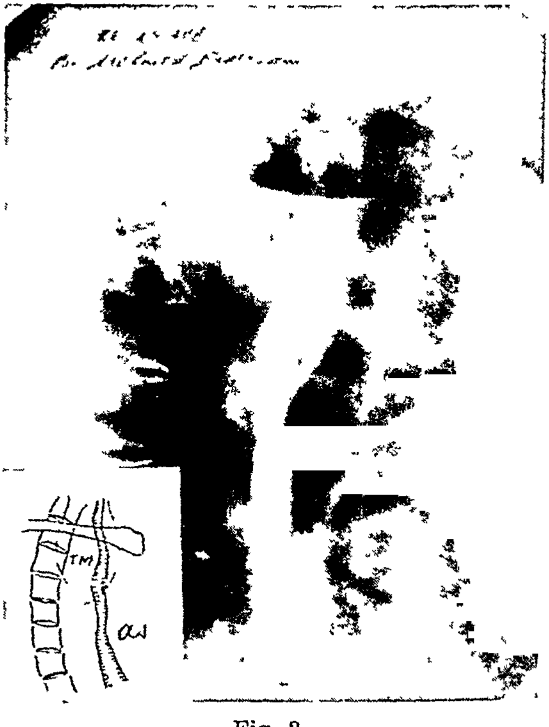

Fig. 2

tionnées dans 45 statistique differentes, soit 8.6%.

Mais ce chiffre contient aussi bien les goitres aberrants que les goitres ectopique primaires ou secondaires, sans discerner les localisations anatomiques. Tandis que Peabody ne collige que 55 cas de "Goitre médiastinal postérieur" dans la littérature médicale.

2. C'est un vrai cas de goitre aberrant.

Parce qu'il n'y avait pas une "pédicule supérieur" assurant la liaison du goitre avec la région cervicale basse. Au contraire, ce goitre avait une pédicule vasculaire contenant des artères et des veines, prevenant des vaisseaux de la 3 ième espace intercostale, et qui attache le pôle inférieur de cette masse à la paroi thoracique.

En effet, l'irrigation des goitres aberrants provient des vaisseaux intrathoraciques de l'artère sous clavière ou mammaire interne (Avery), de l'aorte (D'Abreu, Harter), des tissus environnants (Rivers, Janes, Nissen, Kastrup, Börger, Schneicher, Naef.).

3. Bien que la masse tumorale exerce une compression et un refoulement sur la trachée et l'oesophage, d'arriére en avant et de droite à gauche, il ne s'agit pas d'un goitre aberrant, dit "retro-oesophagien" ou "médiastinal postérieur," au sens propre du terme. Mais elle est plutêt latero-trachéale, ou bien latero-médiastinale.

4. Quoi que le tissu thyroidien et les noyaux aberrants obeissent aux mêmes stimulants physiologiques, dans ce cas, le goitre aberrant a évolué indépendemment de la thyroide cervicale ayant une consistance et un volume tout à fait normaux.

D'autre part, il n'existait aucun signe d'hyperthyroidie. Or, cette affection peut être observé dans les 30 (Wakeley, Bagolan) à 50% des cas (Mora).

5. Au point de vue anatomo-pathologique, c'est un goitre aberrant colloidal.

D'ailleurs la nature histo-pathologique des goitres intra thoraciques ressemble à celle des goitres cervicaux. Elle peut être aussi dégénérée dans une proportion de (2-3%) d'après Perlott et Welti.

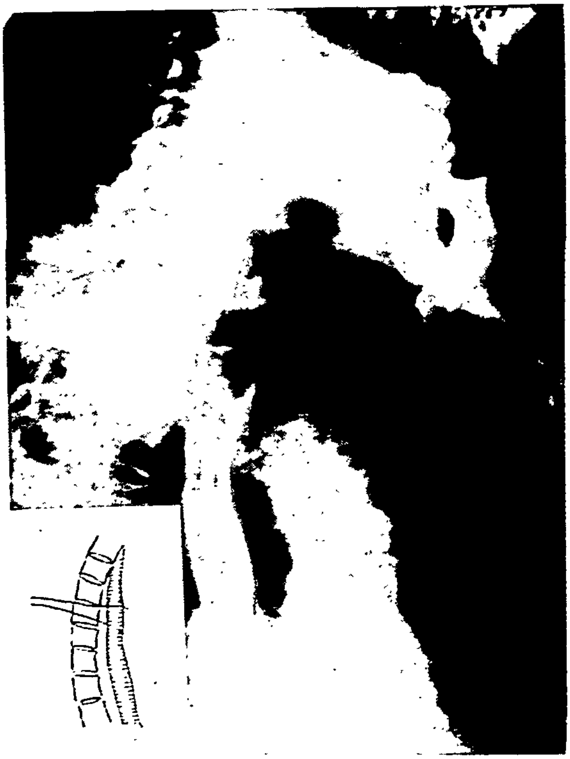

Fig. 7.

6. Les symptômes cliniques sont la toux, la dysphagie, amaigrissement et l'asthénie.

Les deux premiers symptômes sont dus a la compression extrinsèque de l'oesophage et de la trachée.

Comme il n'y avait pas une augmentation assez forte de métabolisme de base, qui était de (+15%) dans notre cas, amaigrissement et l'asthénie résultaient de la dysphagie et l'effet secondaire de la maladie sur le moral du patient.

Le métabolisme de base peut être élevé avec ou sans hypocolestérolémie de l'ordre de 20 à 50% d'après Van der Linden.

7. En présence d'une telle opacité, nous avons pensé tout d'abord aux évantualités suivantes: Kyste parasitaire, dysembryome kystique, abcès pottique pleuresie en-

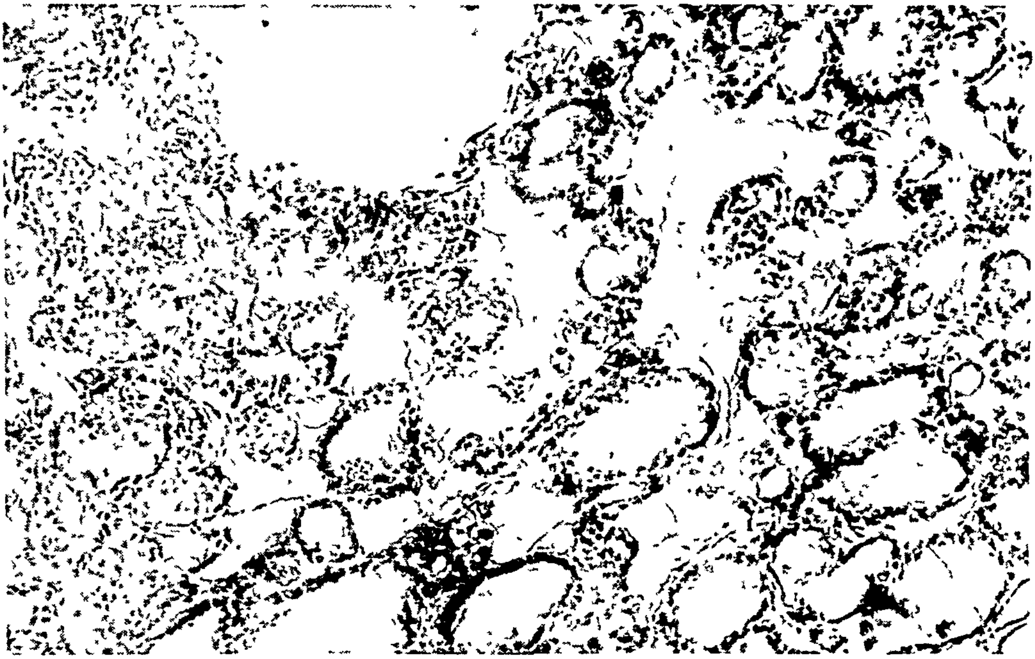

Fig. 5.

d'une petite orange, 7 cm. de hauteur, 4 cm. de largeur, 4,5 cm. d'épaisseur, brunâtre, vascularisée, ovoide, lobulée finement, régulière, lisse et de consistance élastique (Figs. 3 et 4).

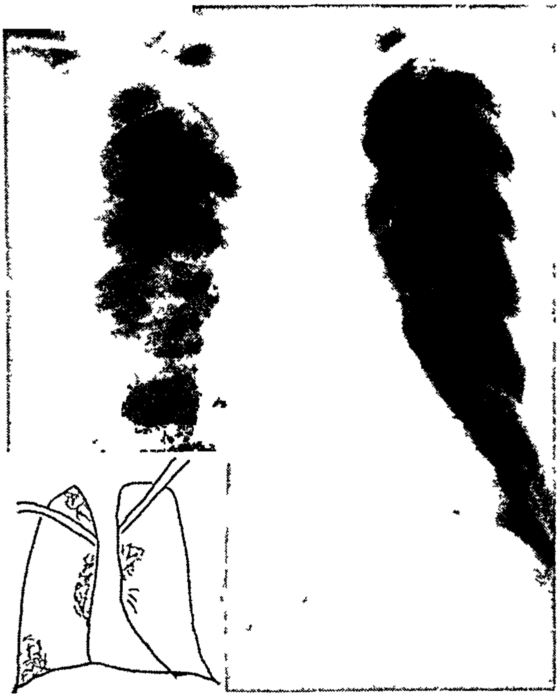

Fig. 6.

Hémostase complète, antibiotiques dans le médiastin et la cavité pleurale, réexpension du poumon, fermeture avec drainage d'aspiration par sonde de Pazzer.

Pas de complication post opératoires ni précoces ni tardives.

A la coupe, elle présente macroscopiquement tous les caractères d'une tumeur thyroidienne bénigne. A l'examen histopathologique (Prof. Dr. Besim Turhan): Fragement constitué par des vesicules de taille inégale, contenant une matière colloide (Fig. 5).

DISCUSSION

1. La localisation d'une goitre aberrant dans le médiastin postérieur est exceptionelle.

En effet MM. M. Bariety et C. Coury ne distinguent dans leur magnifique ouvrage intitulé "Le médiastin et sa pathologie" que 259 cas de goitre intrathoracique sur 3033 néoformations médiastinales men-tionnées dans 45 statistique differentes, soit 8.6%.

Mais ce chiffre contient aussi bien les goitres aberrants que les goitres ectopique primaires ou secondaires, sans discerner les localisations anatomiques. Tandis que Peabody ne collige que 55 cas de "Goitre médiastinal postérieur" dans la littérature médicale.

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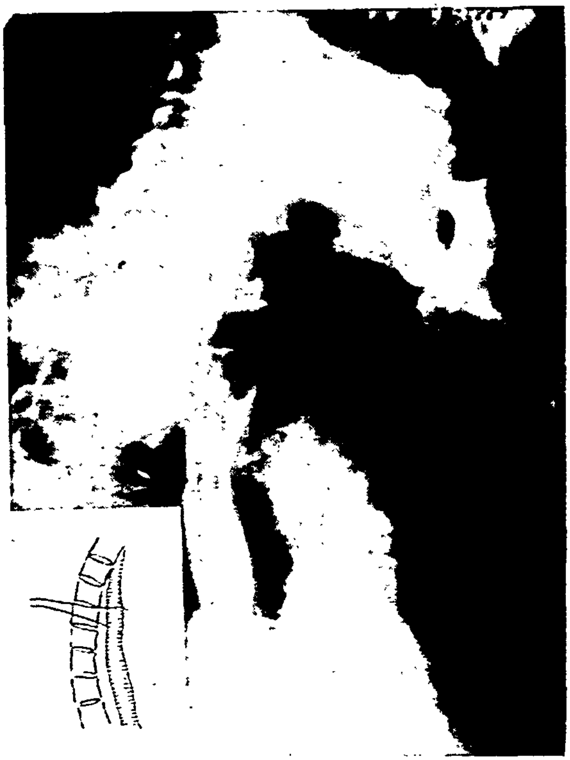

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kystée, tumeur ou dilatation oesophagienne, carcinome médiastino-hilaire du poumon, meningocèle, neurinome, goitre aberrant et une tumeur bénigne du médiastin.

Les réactions sérologiques, les examens radiologiques et endoscopiques, et enfin la ponction exploratrice rélèvent qu'il ne s'agissait pas ici d'une tumeur kystique, d'une tumeur ou dilatation oesophagienne, d'une abcès pottique ou d'un épanchement enkysté.

Il n'én reste que ces trois diagnosticq probables:

— Neurinome

— Goitre aberrant

— Tumeur bénigne du médiastin.

L'indication opératoire se basait sur ces trois diagnostics probables.

8. Dans ce cas, nous a'avons pas fait de pneumo-médiastin en vue diagnostic; car il ne nous servirait pas a grand chose. Mais si cette tumeur s'était placée dans le médiastin antéro-supérieur, le pneumomédiastin en serait probablement utille: En cas de goitre ectopique, il peut montrer l'existence d'une pédicule supérieure qui attache le goitre à la base cervicale (Bariéty).

D'ailleurs on n'a pas fait l'étude de la courbe de fixation de l'iode radio actif qui est loin d'apporter toujours des renseignements concluants (Crohn, Bariety, Coury).

Mais les symptômes cliniques et métaboliques d'hyperthyroidie avec hyperfixation de l'iode radio actif sont en faveur d'une dégénérescence d'un goitre aberrant ou ectopique dont on soupçonne l'existence.

9. La suite opératoire s'est déroulée sans aucune compliaction ni précose ni tardive. La toux et la dysphagie ont disparues (Fig. 7). Le patient a récupéré 5 kg. dans deux mois.

RÉSUMÉ

Les auteurs présentent un cas de goitre aberrant localisé dans le médiastin postérieur, traité exclusivement par le ressort de la chirurgie.

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Editorials

The Development of Otorhinolaryngology and Bronchoesophagology *

FRANCIS L. LEDERER, M.D., F.A.C.S., F.I.C.S., D.A.B.

CHICAGO, ILLINOIS

> *It is delightful to transport one's self into the spirit of the past, to see how a wise man has thought before us, and to what a glorious height we have at last reached.* —*Goethe*

HISTORY has an indefinite beginning and an infinite course. "History," states Claudius F. Mayer, "is the most fundamental science; for there is no human knowledge which could maintain its scientific character, when its possessors forget the conditions under which it arose or lose sight of the people who encouraged its budding. By creating a trend for the future, the past becomes a factor of the present, and it is an organic element of the future human progress." Be that as it may, it is possible for recorded history to be lost, misinterpreted in its transposition, erroneously credited or completely ignored—especially if original sources or scripts are not made available to record first-hand information. Medical historians, particularly those like myself, physicians interested in history, seeking to establish the source and identity of the special fields of otorhinolaryngology and bronchoesophagology, find it far less difficult to accept second-hand data and furthermore, to assemble these as though they were the contributions of persons identified with these fields than to wade through hieroglyphic and cuneiform scripts, not to mention unfamiliar foreign languages. Frankly, since the Lord made heaven and the earth and all that was therein, everything and all things, and many disciplines and discover-

During the months of 1960 and as long thereafter as possible, the editorial pages of the Journal of the International College of Surgeons will be honored by presentations of rare and extraordinary historic value, the lectures presented at the International Surgeons' Hall of Fame on medical and surgical history from the earliest recorded achievements to those of our own times. We believe that Journal readers who were not able to attend the lectures will find them as exciting as did the audiences present at their delivery. The story of progress in the healing arts and the giants of medicine and surgery to whom we owe the amazing brilliance and scope of modern achievements is intrinsically thrilling and is a vital part of the education of every cultivated man and woman, inside or outside the profession. It is altogether fitting that it should appear in these pages, since the International College of Surgeons is first, last and always a teaching institution.

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*Presented as an address at the International Surgeons' Hall of Fame, Chicago, May 5, 1959.

ies have made possible this 1959 report of the history of otorhinolaryngology and bronchoesophagology. The special fields have reflected the advances in all areas of general medicine and surgery—neurology, ophthalmology, microbiology, pathology, biochemistry, diagnostic and therapeutic radiology and thoracic and oncologic surgery.

It is important to bear in mind that specialization as we recognize it today is of relatively recent origin, although not entirely so. In the fifth century B.C., Herodotus stated: "The art of medicine is thus divided among them: medicine is practiced among them on a plan of separation; each physician treats a single disease and no more; thus the country swarms with medical practitioners, some undertaking to cure diseases of the eye, others of the head, others again of the teeth, others of the intestines, and some, those which are not local." Montaigne approved of these views, for he said "The Egyptians were right in neglecting the general calling of physician and of dividing the profession; for each illness, for each part of the body, there was an attendant, and therefore each part was more skillfully and less blindly treated, because they studied each one specially."

The specialties of otology and laryngology have different origins, for the early otologists were surgeons accustomed to the use of the syringe, the scalpel and the trephine, and the early laryngologists were physicians who extended their interests in their knowledge of diseases of the chest. By a stretch of historical imagination, one might credit the Egyptian Sekhet'enanch, who lived about 3500 B.C. and was a medical attendant of Sahura, one of the Pharaohs of the Fifth Dynasty, with being a rhinologist. A legend, "He healed the King's nostrils," appears on a limestone slab depicting the physician and his wife. Hippocrates described so very many nasal operative procedures, however, that he should surely be credited as the first rhinologist.

The Talmud, the Bible and Chinese, Hindu and Greek anthology contain much of correlated interest in many fields of medicine and surgery. Folklore, folk medicine and the mores include numerous interesting references to superstitions, beliefs, recipes, amulets, charms, invocations and a host of bizarre diagnostic and therapeutic methods and devices. Throughout recorded history, descriptions of diseases, case histories and instrumentaria reveal an unusual degree of knowledge of the upper part of the respiratory tract. Ancient Hindu surgery (about 1500 B.C.) was technically greatly advanced. Surgeons were equipped with instruments (forceps) for extracting foreign bodies from the nose, ears and outer ear canals. They had "tubular instruments of various types for extracting foreign bodies from the outer canals of the body, for inspection of disease in them, and for sucking out fluids. Their diameters are adapted to the size of the canals or passages into which they are introduced." Since modern medicine is not the exclusive domain of doctors of medicine, many ancillary groups contributing significantly to the field, it is not far fetched, when we delve into the historical past, to relate to medicine or the specialty, the contributions of those who were not directly connected therewith. Some of the anatomic interpretations and diagnostic criteria were somewhat crude, and occasionally philosophy and superstition were the main motivations of thought and therapy. All of this makes interesting reading in the light of the knowledge that was to unfold, with the ensuing centuries, of intellectual activities in all branches of art and science.

In early history, of course, these theorizers were not identified with a specialty, but their contributions made today's progress possible. According to Claudius F. Mayer, "Heroes and great events are remembered by the posterity year after year. Yet, as time is growing older, the celebrated events of today are fading away until they are forgotten tomorrow. It is an act of piety to recall the greater and lesser men of previous centuries. It is also a wise precaution that we pause for a blink, in the rapid progress of our times, to contemplate the past and its teachings for a brighter future." Were one to reconstruct the otorhinolaryngologic and bronchoesophagologic hall of fame, a timetable of persons and related conditions and events (social as well as cultural), would appear as follows:

384-322 B.C. *Aristotle* describes what later became known as the eustachian tube, and discusses deafness and mutism.

335-280 B.C. *Herophilus* is said to be the first to practice dissection of the human body. He describes venous sinuses of the brain. Known as the Father of Anatomy, he states that "the most perfect physician is he who distinguishes between the possible and impossible."

460-370 B.C. *Hippocrates*, known as the Father of Medicine, makes case records that are concise and accurate. He is the first to recognize "what nature does." He states: "Children suffer from ear discharge; adults from deafness. Headaches, otorrhea and a high palate with irregular teeth are often associated." He stresses the necessity of replacement of a nasal fracture within the first twenty-four to thirty-six hours. He advises an internal splint and a thong wound around the head and gluing to the temples. He devises the sponge method of removal of nasal polyps.

25 B.C.-50 A.D. *Aurelius* (Aulus) Cornelius Celsus writes *De Medicina* about 30 A.D., and describes otitis and foreign bodies in the ear. "An insect must first be killed with vinegar and then removed with a probe." Also he discusses reconstruction of the pinna and an operation for stenosis of the canal. His description of nasal anatomy is well done.

80-160 A.D. *Aretaeus* of Cappadocia describes tracheotomy for laryngeal obstruction; describes diphtheria; writes "on causes and symptoms of acute and chronic diseases."

130-200 *Claudius Galen* of Pergamus is credited as the greatest intellect ever produced in the ranks of medicine. He is the first to apply the term "labyrinth" to the inner ear; recognizes otitis media as a sequel to infectious disease; advises removal of carious bone by a postauricular incision; employs plastic operations for defects of the nose, ears and lips; is the first to describe the structure and function of the vocal cords, and the six pairs of intralaryngeal muscles, which he divides into those which open and those which close the larynx. He recognizes the nose as the beginning of the respiratory tract and the curved path of inspired air; also the nasal membranes as conditioners for the lungs.

325-403 *Oribasius* produces an encyclopedia of all manner of knowledge.

500-550 *Aetius* of Amida describes tonsillotomy, anginas, removal of foreign bodies from the respiratory tract and the upper part of the digestive tract, as well as many affections of the nose and mouth.

625-690 *Paulus Aegina* describes vividly the treatment of diseases of the ear; states that congenital deafness is incurable. "Before treating affections of the nose, the whole body must be treated." He performs tracheotomy; defines polyps as originating from ethmoid cells.

980-1036 *Ibn Sina or Avicenna*, known as the Prince of Physicians, writes the *Canon of Medicine* (first edition printed in 1479). He advises ligature for nasal polyps.

1050 *Albucasis* describes removal of tumor (polyp?) from the nose and nasopharynx.

1211-1277 *Guglielmi Salicetti* was the ablest surgeon of the thirteenth century.

1316 The first anatomic textbook appears: *Anathomia*, by *Mondino de Luzzi*.

1452-1515 *Leonardo da Vinci* is first to depict the maxillary and frontal sinuses. (It was in 1651 that Highmore "discovered" the maxillary sinus.)

1514-1564 *Andreas Vesalius* (André Wesel) reforms anatomy by publication of *De fabrica humani corporis* in 1543. Some of the woodcuts are attributed to Titian (1477-1576). Vesalius describes the choanae, malleus, incus, tympanum (which he called "pelvis"), oval and round windows, and the maxillary, frontal and sphenoid sinuses. He also describes the larynx quite well.

1520-1574 *Bartholomeas Eustachio* (Eustachius) describes the chorda tympani nerve, the tensor tympani muscle and the tube which bears his name. His work, *Epistola de Auditus Organis*, is not published until 1562. (In 1724 Guyot first probed the pharyngeal end of the eustachian tube through the mouth; Cleland, in 1740, repeated the procedure through the nose. In 1842 Johannes Müller described it erroneously as continuously open; Toynbee in 1852 showed it to be closed except in the act of swallowing.)

1526 *Paracelsus* founds chemotherapy.

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384-322 B.C. *Aristotle* describes what later became known as the eustachian tube, and discusses deafness and mutism.

335-280 B.C. *Herophilus* is said to be the first to practice dissection of the human body. He describes venous sinuses of the brain. Known as the Father of Anatomy, he states that "the most perfect physician is he who distinguishes between the possible and impossible."

460-370 B.C. *Hippocrates*, known as the Father of Medicine, makes case records that are concise and accurate. He is the first to recognize "what nature does." He states: "Children suffer from ear discharge; adults from deafness. Headaches, otorrhea and a high palate with irregular teeth are often associated." He stresses the necessity of replacement of a nasal fracture within the first twenty-four to thirty-six hours. He advises an internal splint and a thong wound around the head and gluing to the temples. He devises the sponge method of removal of nasal polyps.

25 B.C.-50 A.D. *Aurelius* (Aulus) Cornelius Celsus writes *De Medicina* about 30 A.D., and describes otitis and foreign bodies in the ear. "An insect must first be killed with vinegar and then removed with a probe." Also he discusses reconstruction of the pinna and an operation for stenosis of the canal. His description of nasal anatomy is well done.

80-160 A.D. *Arctacus* of Cappadocia describes tracheotomy for laryngeal obstruction; describes diphtheria; writes "on causes and symptoms of acute and chronic diseases."

130-200 *Claudius Galen* of Pergamus is credited as the greatest intellect ever produced in the ranks of medicine. He is the first to apply the term "labyrinth" to the inner ear; recognizes otitis media as a sequel to infectious disease; advises removal of carious bone by a postauricular incision; employs plastic operations for defects of the nose, ears and lips; is the first to describe the structure and function of the vocal cords, and the six pairs of intralaryngeal muscles, which he divides into those which open and those which close the larynx. He recognizes the nose as the beginning of the respiratory tract and the curved path of inspired air; also the nasal membranes as conditioners for the lungs.

325-403 *Oribasius* produces an encyclopedia of all manner of knowledge.

500-550 *Aetius* of Amida describes tonsillotomy, anginas, removal of foreign bodies from the respiratory tract and the upper part of the digestive tract, as well as many affections of the nose and mouth.

625-690 *Paulus Aegina* describes vividly the treatment of diseases of the ear; states that congenital deafness is incurable. "Before treating affections of the nose, the whole body must be treated." He performs tracheotomy; defines polyps as originating from ethmoid cells.

980-1036 *Ibn Sina or Avicenna*, known as the Prince of Physicians, writes the *Canon of Medicine* (first edition printed in 1479). He advises ligature for nasal polyps.

1050 *Albucasis* describes removal of tumor (polyp?) from the nose and nasopharynx.

1211-1277 *Guglielmi Salicetti* was the ablest surgeon of the thirteenth century.

1316 The first anatomic textbook appears: *Anathomia*, by *Mondino de Luzzi.*

1452-1515 *Leonardo da Vinci* is first to depict the maxillary and frontal sinuses. (It was in 1651 that Highmore "discovered" the maxillary sinus.)

1514-1564 *Andreas Vesalius* (André Wesel) reforms anatomy by publication of *De fabrica humani corporis* in 1543. Some of the woodcuts are attributed to Titian (1477-1576). Vesalius describes the choanae, malleus, incus, tympanum (which he called "pelvis"), oval and round windows, and the maxillary, frontal and sphenoid sinuses. He also describes the larynx quite well.

1520-1574 *Bartholomeas Eustachio* (Eustachius) describes the chorda tympani nerve, the tensor tympani muscle and the tube which bears his name. His work, *Epistola de Auditus Organis*, is not published until 1562. (In 1724 Guyot first probed the pharyngeal end of the eustachian tube through the mouth; Cleland, in 1740, repeated the procedure through the nose. In 1842 Johannes Müller described it erroneously as continuously open; Toynbee in 1852 showed it to be closed except in the act of swallowing.)

1526 *Paracelsus* founds chemotherapy.

1523-1562 *Gabriele Fallopio* (Fallopius) succeeds Vesalius at Padua at the age of 24. To him we are indebted for such names as cochlea, labyrinth, velum palati, abducens nerve, tympanum, chorda tympani, trigeminal nerve, auditory and glossopharyngeal nerve, and aqueduct for the facial nerve. A surgeon as well as an anatomist, he describes aural and nasal polyps and a snare-like technic.

1510-1580 *Ingressias* describes the stapes.

1530-1589 *Aranzi* invents forceps with long jaws for removal of polyps; develops a method of illuminating the nasal cavity by letting sunlight through a hole in a wooden shutter; on dark days uses artificial light passed through a water bottle.

1572 *Volcher Coiter* (or Koyter, 1534-1590), a pupil of Fallopius, writes one of the first textbooks of otology, giving current views of physiology; establishes comparative osteology.

1584 *Hieronymus Mercurialis* (1530-1606) writes *De oculorum et aurium affectionibus praelectiones,* the first clinical manual of otology.

1591 *Petrus Forestus* (1522-97) writes about sense of smell, ozena and nasal polyps.

1597 *Tagliacozzi* publishes a treatise on plastic surgery.

1600 *Fabricius* of Aquapendente (1537-1619) writes about tracheotomy and a work entitled *De visione, voce et auditor.*

1627 *Julius Casserius,* a student of Fabricius, is the author of *Tabulae Anatomicae.*

1627-1675 *Thomas Willis* describes the seventh and eighth nerves and the sense of hearing; also the symptom known as the paracussis of Willis.

1648 *Athanasius Kircher* describes the ear trumpet.

1666 *Antony van Leeuwenhoek* (1632-1723) finds that a single lens of very short focus is superior to the compound microscope and makes important discoveries with carefully ground single lenses.

1649 *Riolanus* performs mastoidectomy, as did *Rolfinck* in 1646, followed by *Petit* in 1736; in England in 1868 and in America in 1862.

1648-1730 *Joseph Guichard Duverney* writes *Traite de l'organe de l'ouie* (1683), the first book in otology written in a language other than Latin. He is the first to show that the external canal developed from the annulus; corrects views concerning the eustachian tube, and describes the bony internal ear. He is known as the Father of Otology.

1760 *Thomas Braidwood* establishes the first school for the deaf in Edinburgh, although *J. K. Ammann* (1663-1730) taught the deaf in 1692.

1665-1723 *Antonio Maria Valsalva,* anatomist, physiologist and surgeon, writes *De aura humana* (1704), containing epochal works on the external, middle and inner ear. He dissects more than a thousand ears. He is first to describe fixation of the stapes as cause of hearing loss, and suggests a procedure of closing the nostrils to force air into tympanum by way of eustachian tube (Valsalva's method).

1682-1771 *Giovanni Battista Morgagni* describes the ventricles of the larynx.

1710 *Giovanni Domenico Santorini* (1681-1737) describes muscle and cartilage in the larynx. He writes (1724) a lucid, well-phrased descriptive work, *Observationes anatomicae.*

1711 *John Shore* invents the tuning fork; in the eighteenth century pitch was usually explained by musical technics rather than in the language of physics.

1717 *Rivinus* of Leipzig publishes a thesis describing the tympanic notch.

1718 *Lorenz Heister* (1683-1758) is the first to use the term "tracheotomy"; describes polyps arising from the ethmoids, and writes the first system of surgery in the German language.

1724 *Edme-Gilles Guyot,* postmaster of Versailles, invents a eustachian catheter to relieve his own deafness; it passed into the mouth behind the palate.

1734 *Johann Friedrich Cassebohm* (1699-1743) writes five tracts on the ear.

1741 *Archibald Cleland,* a Scottish military surgeon (and, in 1755 *Jonathan Wathen*) passes a catheter by way of the nose.

1742 *Johann Theodor Pyl* (1749-1794) observes endolymph.

1765 *Anselme-Louis-Bernard Jourdain-Berchillet* (1734-1816), a Parisian dentist, suggests irrigation through the hiatus semilunaris.

1750 The first medical school in the United States is founded at Philadelphia by *William Shippen* and *John Morgan,* Edinburgh graduates.

1751 *J. F. Meckel Sr.* (1724-1774) describes the distribution of the facial nerve and the fifth nerve.

1777 *Philipp Friedrich Meckel* writes *Dissertatione inauguralis de labyrinthi auris contentis.*

1791 *John Rotheram* describes the physiologic aspects of hearing.

1799 *Humphrey Davy* (1788-1829) discovers the anesthetic properties of nitrous oxide; later isolates Ha, K, Ca, Mg., S and B.

1804 *Sir Astley Paston Cooper* (1768-1841) cures deafness (temporarily) by puncturing the tympanic membrane in his first important surgical work, for which he receives the Copley medal.

1804 *Deschamps* publishes *Treatise on the Dis-*

cases of Nasal Fossae and Their Sinuses.

1736-1822 *Domenico Cotugno* discovers labyrinthine and cerebrospinal fluid and in 1761 writes *De aqueductibus auris humanae internae.*

1810 *Desault* performs laryngotomy for removal of a foreign body.

1809 *John James Watt* is first with colored plates in his *Anatomico-Chirurgical Views of Nose, Mouth, Larynx and Fauces.*

1817 *Thomas H. Gallaudet* founds the American Asylum for Education and Instruction of Deaf and Dumb at Hartford, Connecticut.

1819 *Rene Laennec* (1781-1826) develops cylindric paper, later wood, stethoscope.

1752-1832 *Antonio Scarpa* (1748-1832) advances aural anatomy.

1821 *Jean M. G. Itard* (1774-1838) writes excellent textbook in French, also for education and rehabilitation of the deaf.

1822 New York Eye and Ear Infirmary is founded by *Edward Delafield.*

1825 *Thomas Buchanan* (1782-1853) writes *Illustrations of Acoustic Surgery.*

1826 *Pierre Bretonneau* (1771-1862) describes "diphterite," giving it its name.

1827 *Richard Bright* (1789-1858) describes essential nephritis.

1828 Massachusetts Eye and Ear Infirmary is founded.

1828 *Thomas Buchanan* publishes *Physiological Illustrations of Organs of Hearing.*

1829 *Daguerre* introduces photography.

1830 *Joseph J. Lister* devises an achromatic lens for the microscope.

1831 *Guthrie, Liebig* and *Soubeiran* isolate chloroform.

1819-1889 *Friedrich E. R. Voltolini* is founder of *Monatschrift fur Ohrenheilkunde.*

1832 British Medical Association is founded.

1832 *Henry Jones Shrapnell* (1761-1841) notes local differences in the tympanic membrane.

1832 *Thomas Hodgkin* (1798-1866) describes enlargement of the spleen and lymph nodes.

1834 *E. H. Weber* and his physicist brother Wilhelm, of Leipzig, publish a test bearing their name.

1835 *Robert James Graves* (1763-1849) describes exophthalmic goiter, later (1840) described by *Karl von Basedow* (1799-1854).

1837 *Frederick Ryland* publishes *Treatise on Diseases and Injuries of Larynx and Trachea,* a clear exposition before invention of the laryngoscope.

1838 *George Pilcher* of London writes *The Structure, Economy and Diseases of the Ear.*

1839 *James Yearsley* (1805-69) founds the Metropolitan Ear Institution, the first of its kind.

1839 The first dental journal is published.

839 *Theodor Schwann* (1810-82) establishes the cell theory.

1839 *Rowland Hill* introduces postage stamps.

1840 The first dental school and society are formed in Baltimore.

1840 *Giovanni Battista Amici* (1784-1813) employs crown and flint glass and produces the first immersion system for the microscope by using water.

1794-1876 *Maximillian Joseph von Chelius* writes a standard textbook, *Handbuch der Chirurgie.*

1822-1888 *Marquis Alfonso Corti,* Italian histologist, first describes the cochlear area bearing his name.

1824 *M. J. P. Flourens* (1794-1867) lays the groundwork for experimental physiology of the labyrinth; he is first to suggest that the cochlear nerve has two components.

1841 *Jacob Friedrich Gustav Henle* (1809-1885) brings forth his epochal works on Anatomy (also in 1862 and 1871).

1841 *Friedrich Hoffman* invents a hand mirror for reflecting light.

1843 Rush Medical College (founded by *Daniel Brainard* [1812-1866]) opens; chartered in 1837.

1845 *Francis Rynd* describes the hypodermic method of introducing drugs.

1846 *William R. Wilde* (1815-76) writes *Practical Observations on Ear.*

1846 *William T. G. Morton* (1819-1868) introduces ether as an anesthetic agent, although a number of others fight for priority: (*Horace Wells* [1815-1848], *Charles T. Jackson* [1805-1880], and *Crawford W. Long* [1815-1878]).

1847 American Medical Association is organized.

1847 *John Snow* (1813-1858) administers ether in London.

1847 *James Young Simpson* (1811-1870) introduces chloroform.

1848 *William Dufton* writes *The Nature and Treatment of Deafness and Diseases of the Ear.*

1849 *Hermann von Helmholtz* (1821-1894) gives the world the theory of hearing (the piano theory); invents the ophthalmoscope, and lays the groundwork for physiologic optics; writes *Sensations of Tone* in 1862.

1850 *M. H. Landouzy* (1812-1864) (also *Leared, March* and then *G. P. Cammann* of New York [1804-1863]) introduces the binaural stethoscope.

1851 *Alfonso Corti* (1822-1888) publishes a description of the cochlea, as does *Ernest Reissner* (1824-1878) of the vestibular membrane.

1851 *Gurdon Buck* (1807-77), a general surgeon of New York, is first to perform thyrotomy for successful removal of laryngeal carcinoma.

1851 *Claude Bernard* explains the vasomotor function of the sympathetic nerve.

1852 *Charles Gabriel Pravaz* (1791-1853) introduces the hypodermic syringe.

1854 *Manuel Garcia* (1805-1906), a singing teacher, introduces indirect examination of the larynx by means of a mirror.

1855 *Thomas Addison* (1793-1860) describes disease of the supradrenals.

1855 *Heinrich Adolph Rinne* (1819-1868) of Göttingen describes the test bearing his name, although its clinical use was not developed until a generation later.

1855 *E. Hartrack* improves the microscope.

1855 *Anton von Tröltsch* (1829-90) of Würzburg, introduces a concave aural mirror; proposes the term "otosclerosis."

1856 *Fordyce Barker* (1817-1891) devises a hypodermic syringe.

1857 *Bouchut* performs intubation of the larynx.

1857 *Louis Pasteur* (1822-95) demonstrates the truth of the vitalistic theory.

1858 Chicago (later the Illinois) Charitable Eye and Ear Infirmary is founded by *Edward Lorenzo Holmes* (1828-1900).

1858 *Semeleder* attaches a mirror to a spectacle frame.

1858 *J. N. Czermak* (1828-1873), a physiologist, describes the use of the laryngeal mirror.

1858 Laryngoscopy is introduced into America by *Ernest Krackowizer;* later *Louis Elsberg* (1861) and then *J. Solis Cohen* (1866) made contributions.

1858 *Rudolph Virchow* (1821-1902) publishes *Cellular Pathology.*

1860 *Joseph Toynbee* (1815-66) writes a classic, *Diseases of the Ear;* is one of the first to describe stapes fixation in otosclerosis.

1860 Anesthetic properties of cocaine placed on tongue are discovered by *Albert Niemann* in Wöhier's laboratory.

1815-76 *William R. Wilde* writes *Aural Surgery* and describes his incision.

1860 *Czermak* introduces posterior rhinoscopy.

1860 Modern hospital nurses' training school is established at St. Thomas', London.

1836-1921 *Wilhelm von Waldeyer* describes the lymphoid ring of the pharynx.

1861 *Prosper Ménière* (1799-1862) publishes a symptom complex.

1861 *Paul Broca* (1824-1880) discovers the speech center in the brain.

1861 Teaching of laryngology begins with *Türck* and *Semeleder* in Vienna.

1862 *Lawrence Turnbull* (1821-1900) performs the first mastoidectomy in the United States.

1862 *Victor von Bruns* performs the first laryngeal operation with the laryngoscope.

1863 *E. Mach* publishes his work on the theory of hearing.

1863 *Helmholtz's* tonal theory is published.

1864 American Ophthalmological and Otological Society is founded.

1864 *Emil Siegle* (1833-1900) introduces the pneumatic otoscope.

1865 *Adam Politzer* (1835-1920) writes *Atlas der Beleuchtungsbilder des Trommelfells im gesunden und Kranken Zustande für Praktische Aerzte und Studierende.*

1866 *Patrick Heron Watson* (1832-1907), of Edinburgh, first performs laryngectomy for syphilis; patient dies of pneumonia.

1866 *Alexander Graham Bell* (1847-1922) attempts to transmit speech to his deaf wife, which results in invention of the telephone; endows Volta Bureau.

1867 *Joseph Lister* (1827-1912) introduces antisepsis; pus becomes reprehensible instead of laudable.

1868 *James Hinton* (1822-1875) performs the first mastoidectomy in England.

1868 *Hans Wilhelm Meyer* of Copenhagen (1824-1898) describes adenoid vegetations.

1868 American Otological Society is founded.

1869 The *Archives of Ophthalmology and Otolaryngology,* the first specialty journal, appears.

1869 *Charles Edouard Brown-Sequard* (1818-94) introduces the doctrine of internal secretions.

1870 The clinical thermometer is introduced into hospital practice by *Wunderlich.*

1870 *Adam Politzer* (1835-1920), the first professor of otology in Vienna, with *Josef Gruber,* founds the first aural clinic, a mecca for postgraduate teaching. Politzer writes classics on the ear, teaches in four languages, is no narrow specialist: "Everything is connected with everything."

1874 *James Hinton* publishes *Atlas of the Membrana Tympani.*

1872 *Billroth* resects the esophagus.

1873 The ear clinic is established in Vienna by *Adam Politzer,* the father of scientific otology (1835-1920).

1873 The first training school for nurses is established in the United States, in Bellevue, New York.

1873 *Clinton Wagner,* a pupil of Morell Mackenzie, founds the Metropolitan Throat Hospital in New York City and the New York Laryngological Society.

1873 *Christian Theodor Billroth* (1829-1894) is the first to remove the larynx for carcinoma; also the first to resect the esophagus (1872).

1873 Retinoscopy is conceived by *Cniquet.*

1874 *J. Breuer* publishes experiments on the labyrinth.

1874 *Lennox Browne* (1841-1902) founds the Central London Throat Hospital for postgraduate teaching.

1875 Septal surgery is initially attempted by

Adams; but first submucous resection was by *Ingalls* in the United States in 1882; *Krieg* in 1886; *Boeninghaus* in 1895; *Killian* in 1900, and *Freer* in 1902.

1875 The science of microbiology is initiated *(Pasteur* and *Koch).*

1877 *Bezold* (1842-1908) gives the first clear description of mastoiditis, but *Hermann Schwartze* (1837-1900) publishes cases in which the operation is performed for relief of suppuration.

1877 *Pasteur* proves the bacillary origin of anthrax, which *Koch* obtained on artificial media in pure culture.

1877 *J. Kessel* describes mobilization of the stapes by way of the tympanic membrane; also removal of the stapes.

1877 *Ernst Karl Abbe* (1840-1905) devises homogeneous immersion for microscopic procedures, using cedarwood oil.

1878 *H. Macnaughton Jones* (1844-1918) publishes *Atlas of the Membrana Tympani.*

1879 The American Laryngological Association is formed.

1879 *Karl Joseph Eberth* (1835-1926) discovers typhoid bacillus, obtained in pure culture by *Gaffky* (1884).

1879 First session of the Section on Ophthalmology and Otolaryngology is held by the A.M.A.

1879 Electric light is invented by *Thomas A. Edison.*

1879 *Albert L. S. Neisser* (1855-1916) discovers a specific diplococcus as the cause of gonorrhea; obtained in pure culture by *Bumm* (1885).

1880 *Pasteur* publishes the results of attenuation of a virus; discovers the streptococcus, the staphylococcus and the pneumococcus.

1881 *Pasteur* renders animals immune to anthrax.

1882 *Robert Koch* (1843-1912) discovers the bacillus of tuberculosis; also introduces gelatine media (solid plate cultures) and steam sterilization.

1882 *Adolf von Behring* (1854-1917) announces the discovery of antitoxin for diphtheria; treats with antitoxin in 1890; describes toxin-antitoxin immunization (1912).

1883 *Edwin Klebs* (1834-1914) discovers the diphtheria bacillus and *Friederich A. J. Löffler* obtains it in pure culture (1884).

1883 *Journal of the American Medical Association* is issued on July 1.

1884 *Carl Koller* employs cocaine in ophthalmic surgery.

1885 *D. Schwabach* of Berlin criticizes Weber and Rinne tests and brings forth his own.

1885 *Pasteur* inoculates against rabies.

1885 *Joseph P. O'Dwyer* (1841-1898) originates intubation for diphtheria, although intubation dated back to Hippocratic times, to *Desault,* to *Bishat* and *Bouchat* of Paris in 1856.

1886 *E. Abbe* invents a microscope with substage illumination.

1886 *Theodor Escherich* (1857-1911) discovers Bacillus coli; isolated by *R. Emmerich* (1852-1914) in 1884.

1886 *Ernest von Bergmann* (1836-1907) introduces steam sterilization into surgery as proposed by *Lautenschlager.*

1886 *E. Berthold* describes an artificial drum and myringoplasty.

1886 *Pierre Marie* (1853-1940) associates acromegaly with the pituitary gland.

1886 *Soxhlet* introduces sterilized milk for infants.

1887 *Anton Weichselbaum* (1845-1920) discovers the meningococcus.

1887 *Sir Morell Mackenzie* (1837-1892) with *Norris Wolfenden,* founds the *Journal of Laryngology* (and later, *Otology*).

1888 *E. Boucheron* reports on mobilization of the stapes.

1889 *Friedrich Johannes Pfeiffer* (born 1858) discovers the influenza bacillus.

1889 Bacillus tetanus is discovered by *Arthur Nicolaier* (born 1862).

1890 *Koch* introduces tuberculin.

1890 *Emanuel Zaufal* of Prague and *Ludwig Stacke* of Erfurt are the first to describe radical mastoid technics.

1890 *Schleich* introduces infiltration anesthesia.

1890 *C. Moit* describes a technic of stapes mobilization.

1892 *Ewald's* important experiments on the labyrinth are made known.

1892 *F. L. Jack* removes the stapes for chronic catarrhal otitis and for suppurative otitis.

1894 *C. Miot* and *J. Baratoux* describe surgical mobilization of the stapes.

1894 *Kirstein* devises direct laryngoscopy.

1895 The American Laryngological, Rhinological and Otological Society is founded.

1896 *Almroth E. Wright* gives typhoid vaccine inoculation.

1895 *Wilhelm Konrad Röntgen* (1845-1922) discovers the roentgen ray.

1896 The American Academy of Ophthalmology and Otolaryngology is founded.

1897 *Christian Eijkmann* (1858-1930) discovers vitamins.

1897 *Adolf Passow* is the first to make a new window next to the oval window in an attempt to restore hearing.

1898 Radium is discovered by *Pierre* (1859-1906) and *Marie Sklodowska Curie* (1867-1934).

1897 *L. Stacke* describes conservative mastoidectomy.

1898 *Gustav Killian* (1860-1921) introduces direct bronchoscopy.

1901 *Karl Landsteiner* (1868-1943) discovers blood grouping.

1901 Epinephrine is isolated by *Takamine.*

1901 *Matté* describes a technic of radical mastoidectomy, in which the drum is permitted to rest on the head of the stapes, to improve hearing.

1903 *Riva Rocci* invents the sphygmanometer.

1904 *Giuseppe Gradenigo* (1859-1926) describes the sixth nerve syndrome.

1905 *Robert Barany* (1876-1936) Nobel prizewinner, begins research on the labyrinth.

1905 *Shaudin* and *Hoffmann* discover Spirochaeta pallida as the cause of syphilis.

1905 *Braun* clinically applies the discovery of procaine hydrochloride by *Einhorn.*

1906 *Albert von Wassermann* (1866-1925) introduces a serologic test for syphilis.

1906 *Von Pirquet* outlines the doctrine of allergy and introduces the cutaneous reaction in tuberculosis (1907).

1907 *Ramsay Hunt* describes the geniculate ganglion syndrome.

1910 *Ehrlich* and *Hata* introduce salvarsan (606).

1910 *Bondy* describes modified mastoidectomy with preservation of the drum membrane and ossicles.

1914 *Max A. Goldstein* (1870-1942) founds the Central Institute for the Deaf in St. Louis: "Help the handicapped child to help himself."

1918 *Dandy* evolves a method of air study ventriculography.

1921 *F. G. Banting* and *C. H. Best* isolate insulin.

1921 *Reuben L. Kahn* introduces a serum test for syphilis.

1924 First examining board, that of the American Board of Ophthalmology, is established. This was followed by the American Board of Otolaryngology in 1924.

1929 *Alexander Fleming* (1881-1955) writes "on the antibacterial action of cultures of a penicillium with special reference to their use in the isolation of B.influenzae." (Penicillin not in clinical use until 1943, through the efforts of *Florey* and *Chain.*)

1932 *M. Sourdille* describes surgical fenestration for otosclerosis.

1938 *Julius Lempert* describes a fenestra nov-ovalis technic via the endaural route.

1935 *Domagk* introduces prontosil rubrum, a compound of sulfanilamide.

1939 Sulfonamides come into experimental and clinical use.

1951 *H. Wullstein* and *F. Zollner* describe complete mastoidectomy with tympanoplastic technics to preserve and improve hearing.

1952 *Samuel Rosen* presents newer technics of stapes mobilization.

The modern specialties arose as the knowledge of medicine grew in the eighteenth century; first came the oculists, then the obstetricians and gynecologists, and these were followed by the aurists. Specialized hospitals did not appear until the nineteenth century, and special departments of general hospitals came after them. The first special hospital in England was Moorfields, founded in 1805, for the care of the eye and the ear. The founder of Moorfields was John Cunningham Saunders (1773-1810), whose work, *The Anatomy of the Human Ear, with a Treatise on Diseases of that Organ,* illustrated with beautiful engravings, was published in 1806.

In all accepted practice in the nineteenth century the eye and the ear were closely associated in the specialist's mind; it was common practice, therefore, to include both. Held as constituting an associated specialty were laryngology and diseases of the chest and, not infrequently, diseases of children and diseases of the ear, nose and throat. Only during the twentieth century did otology and rhinology become united under the term "otolaryngology," with the addition, later, of the more comprehensive and inclusive descriptive terms "otorhinolaryngology" and "bronchoesophagology." That is why the departmental and catalogue listings of medical colleges have been so frequently altered. It is obvious that many of the men identified with these specialties were so by choice and convenience, and not always by training or adequate preceptorships.

Otology.—When Adam Politzer (1835-1920), the "Dean of Scientific Otology," was graduated from medical school one hundred years ago (1859), an era of improved knowledge and understanding of the ear and temporal bone began, which proceeded to encompass a wide variety of approaches based on his studies with Claude Bernard, Helmholtz, Ludwig, Skoda, Rokitansky, Oppolzer, Ménière, and Toynbee of London, where he laid the foundations for the masterful work that was to follow. He was an indefatigable worker, possessed of an exceptional depth of knowledge, a teacher who trained a Gustav Alexander, a Heinrich Neumann, a Marcus Hajek, a Robert Barany and an Eric Ruttin, and who associated with Heinrich Mueller, von Troeltsch, Hermann Schwartze, Gruber and Urbantschitsch in elevating the standards of otology and establishing Vienna as a mecca for postgraduate students from all over the world.

When Politzer said "The temporal bone has four sides; the outside is bounded by LIFE, from which there comes the opening of the auditory canal, one form of our appreciation of what life means; on the other three sides this bone is bounded by DEATH," he emphasized the current problem of his time, namely, combatting the complications of the suppurating ear. His century, however, busily engaged itself in establishing otology as a specialty, expanding the knowledge of basic anatomy and pathology and even probing the mechanisms of function. It has been a golden era, associated with a galaxy of great names and contributions characterized for their vigor and resourcefulness.

Each passing day has brought forth new knowledge and technics, making yesterday's contribution either obsolete or just another step toward the solution of age-old problems. One thing is clear, however, whether it refers to basic knowledge, an instrument, surgical technic or the social or economic implications inherent in sensory loss, our otologic forebears need to be consulted, lest claims of complete originality result in embarrassment to the new discoverer. This does not discredit those vhose contributions have been embellished y advances in electronics, surgical oto-icroscopy, antimicrobial therapy and the ew knowledge of audiology.

Galen (131-201 A.D.) gave no account of the anatomic nature of the internal ear, although he compared it to a labyrinth, a name which Fallopius (1523-1562) fourteen hundred years later bestowed upon it. About 1542 A.D., Andreas Vesalius (1514-1564), who is said to have been the most accurate anatomist of his day, described the long process of the malleus, the eustachian tube, the vestibule and the semicircular canals. Bartholomeo Eustachius (1524-1574) gave a superficial description of the cochlea. Julius Casserius, who was a professor in Venice in 1609, was the first to describe the three and a half turns of the cochlea and the membranous zone.

In the seventeenth century, Antonio Maria Valsalva (1665-1723) exceeded his predecessors in the amount and exactness of his knowledge of anatomy. He devoted sixteen years to the study of the ear from the anatomic standpoint and dissected more than a thousand heads. His anatomic plates demonstrate an excellent knowledge of the cochlea and semicircular canals. Cassebohm, about 1730, disproved Valsalva's idea of the close connection between the cavity of the tympanum and the cerebrum; he described the cochlea, and the development of the auditory apparatus in the fetus.

Domenico Cotugno (1736-1822), about 1761, first clearly showed that the labyrinth was filled with fluid (but overlooked the membranous labyrinth), and that this was one of the necessities for perception of the undulations called sound. He recognized the fact that the basilar membrane was broadest at the apex and narrowest at the base, so that low tones are perceived at the apex and high tones at the base.

In 1772 Antonio Scarpa (1747-1832) issued a work on the structure of the ear, which brought the knowledge of its inner arrangement to such a height that it seemed to his contemporaries there was little more to be learned. He described the fenestra rotunda, the osseous and membranous labyrinth and the expansion of the acoustic nerve.

Galen recognized otitis media as a sequel to infectious disease, advocated free drainage, opposed plugging the external canal with wool and realized that the condition might lead to intracranial complications. Furthermore, he advised that carious bone be removed after a postauricular incision had been made. It must be recalled that the first treatise on otology was published in 1638 by Joseph Duverney. He was the first to describe diseases of the ear in accordance with their anatomic origin. *The earliest suggestion of opening* the mastoid by operation, however, was made by the anatomist Johannes Riolanus in 1649. He recommended perforation of the mastoid to relieve eustachian blockage and in the treatment of tinnitus. Jean Louis Petit (1674-1740) was the first to make an artificial opening in the mastoid (1774). He considered purulent inflammation of the mastoid with caries the only indication for trephining the mastoid process. For his operations he used a chisel as well as a pointed drill and a trephine. As a result of hostility against this procedure on the part of contemporary surgeons, as well as willful misinterpretation of the aims and objectives of the operation, Petit was discredited, and progress along this line was arrested for one century.

Valsalva, in 1740, was the first to use the spontaneous opening in the mastoid to relieve otorrhea. Later, in 1757, Heuermann reported spontaneous perforation of the mastoid cortex and skin due to necrosis in the course of suppurative otitis media. Syringing behind the ear into the tympanum was then the practice. The otologist did not produce the opening but merely took advantage of its being present. Neither Valsalva nor Heuermann was impressed with its importance, and neither understood the pathologic background.

Through the untiring efforts and accurate observations of Jean Marie Gospard Itard (1773-1858), the progress of otology was accelerated in France. It was not until the middle of the nineteenth century that English otology was stimulated through the efforts of William Robert Wilde (1815-1876) and Joseph Toynbee (1815-1866). Wilde advocated postauricular incision for the relief of periosteal abscess. He did not suggest opening the mastoid, an inadequate substitute for mastoidectomy. The operation was especially useful in the treatment of periostitis and mastoiditis in very young children.

Some surgeons recognized the fact that the Wilde incision was inadequate. An attempt was made to improve it, not only by draining the periosteum but by perforating the cortex of the mastoid for the relief of purulent mastoiditis. These were Turnbull and Crosby in the United States and Ludwig Mayer in Germany in the year 1864. Von Tröltsch had published a paper in 1861, describing the surgical principles upon which the mastoid operation should be based. L. Jacoby, a general surgeon of Breslau, in 1868 advocated the mastoid operation and cited indications for it. In 1873, Hermann Schwartze introduced the mastoidectomy as we know it today. It took from 1873-1875 for this operation to supersede all previous operations and become the procedure of choice. Schwartze was the first to enunciate the principles upon which the steps of the mastoid operation were based. As a result of his anatomic studies, he became convinced that the antrum was the main seat of inflammation and that pus flowed out from it. He worked out a method of drilling into the mastoid cortex behind the posterior bony canal, connecting this artificial canal with the antrum in order to allow the inflammatory product (pus) to flow out. He used chisels, gouges and curettes. In comparison to the previous procedures this was a great advance for otology and was also a credit to Schwartze, who alone, against the opinion of the surgeons and without assistance of other otologists, continued his work. Schwartze later improved his method. His first advancement was the use of the chisel instead of the trephine and lead nails; his second was the use of the sharp curette, which was introduced by Shäde.

There were others who contributed to the new knowledge of pathologic anatomy, namely, Bezold and Politzer. The work of these men laid the foundation for the development of the radical mastoid operation. Methods were devised to get at the pus through the opening of the drum. Here again it was Schwartze who was the first, in 1884, to excise the tympanic membrane and the ossicles when caries of the malleus and cholesteatoma of the tympanic cavity were present, or there was perforation of the pars flaccida of the drum with attic cholesteatoma. He devised a technic that was employed by Kretchmann, Hessler, Gruner, Ludwig and, in particular, Ludwig Stacke. Stacke removed not only the malleus but the incus (tympanoatticomastoidectomy with a plastic flap). Hartmann (1889) already had devised instruments to remove the lateral attic wall from the bony ear canal.

The birth of the radical operation occurred in 1889. It is certain that the idea did not spring from one source alone; it was developed from the ideas and work of many. Ernst Küster (1889) deserves credit for his significant suggestions in an article published in the German Medical Weekly, entitled "Foundation of the Treatment of Pus in Cavities of Rigid Structures." This publication had a convincing effect on every otologist. He stated the principle of removing all the disease n the mastoid and middle ear. Emanuel aufal, in 1890, pointed out that if one oes not arrive directly into a hollow space he chisels away the posterior superior bony external canal until he reaches the antrum, an essential of this operation. Both Stacke and Zaufal corrected the classification of ear disease by Küster. Both declined to do the radical operation in cases of acute disease, but recommended it for chronic suppuration of the middle ear. Zaufal considered it indicated especially for chronic middle ear suppuration with cholesteatoma, facial paralysis or intracranial complications. Bezold mentioned, as a positive indication for the radical operation, chronic middle ear suppuration that did not respond to conservative treatment over a long period.

After this, another important advance was the introduction of the conservative-radical operation. This was a radical operation in which the middle ear ossicles and tympanic membrane were preserved. Jansen (1893), Siebenmann, Körner and Schedie in 1894 described such technics.

Contributors to mastoid surgery by Americans in the decade from 1890-1900 included Bacon, Dench, Gruening, Knapp, Blake, Orne, Green, Buck, Roosa, Randall, Jack and McKernon.

Fritz Thies Sr., in 1907, was the first to succeed in performing the radical operation through the external auditory canal with the region under local anesthesia. His report was published in 1908. He later performed the operation in 1,550 cases, without complications except for facial palsy in 1 case. Through a skin incision he exposed the upper and posterior walls of the canal and proceeded to work with gouges.

In 1921 Herman Essen discussed the method of Thies and described his modification of this technic and the special instruments he employed. He turned back a flap of skin instead of removing it. Essen chose only cases in which cholesteatoma was present, while Thies operated in many cases in which this type of pathologic change was not involved.

In the United States the endaural approach to acute and chronic suppuration was revived by Julius Lempert, who in 1938 reported 1,780 operations on the mastoid and middle ear through a triangular incision in the external auditory meatus.

Labyrinthine surgery is a fairly recent development, for two reasons: because of mechanisms that interfere with the transmission and interpretation of sound, and because of infectious processes that may affect the labyrinth.

About 1791 a Danish surgeon, Johann Just von Berger, because of deafness which had been years in developing and which was accompanied by vertigo, headache and tinnitus in both ears, had his mastoid perforated. Lateral sinus thrombosis and meningitis developed, and he died. This is one of the first references to an operation performed for relief of deafness. In 1776 Jasser tried to improve hearing via the mastoid, without success. Frielitz, however, in 1790, reported restoration of hearing. The operation was abandoned until about 1861, when it was revived by Anton Von Tröltsch, the surgeon credited with doing the first simple mastoidectomy.

Since the earliest labyrinthine operation was performed for the improvement of hearing, it will be discussed first. As early as 1876, Kessel attempted to remove the stapes with the idea of replacing its footplate with a movable cicatricial membrane. This method was doomed to failure, because the two crura were often fractured, thereby interfering with removal of the footplate. The danger of infection and the technical difficulties encountered without the use of local anesthetics were great.

Gellé, in 1885, discussed various operations employed in cases of retraction and immobility of the ossicles of the ear, but stated that these operations did not improve hearing if the tissues around the oval window were sclerotic, with fixation of the stapes in this window. In 1888, however, E. Boucheron reported some degree of success in mobilizing the stapes, and in 1890 E. Miot described its technic most meticulously. He was joined by J. Baratoux in 1894. From Kessel's first attempt to remove the stapes until about 1897, the literature contains numerous accounts of different methods of removal of the stapes. In 1893 Politzer noted that excision of the tympanic membrane with the malleus and extraction of the stapes had recently been recommended for dry catarrh of the middle ear with progressive auditory disturbances, for the improvement of hearing. The great expectations attached to these operations because of the good results reported had not been fulfilled, since continued observation of the patients so treated showed, for the most part, unfavorable late results. When once the stapes is fixed in the oval window by bony processes (even if only partially so), operation, in Politzer's opinion, becomes impossible, because the branches of the stapes will break off on the slightest traction. Since the new bone formation developing in the labyrinthine capsule, as described by Politzer, proliferates toward the stapes plate and the oval window and may even proliferate from the outside over the stapes plate, it is evident that even early extraction of the stapes would not arrest the progressive bony proliferation in the labyrinth capsule and the ultimate occlusion of the oval window.

Operations for removal of the stapes continued, and in 1897, at a meeting of the German Otological Society, Panse discussed his experience with operations for the removal of the stapes. In the discussion of this paper Adolph Passow stated that, in view of the difficulties of successful removal of the stapes, it had occurred to him that perhaps the same result could be obtained by making an orifice in the labyrinthine wall. This operation was performed for the first time in 1897 on a man 36 years old, who for about five years, after middle ear inflammation, suffered from progressive left-sided hearing loss, tinnitus and vertigo. A whisper on the left was heard only *ad concha*. A fenestra was made with a drill next to the footplate, at first with striking results. Later the auditory capacity was observed to diminish, then slightly increased up to 0.5 m. The tinnitus did not return, and vertigo occurred only on stooping.

Opposition to attempts at correction of a hearing defect by removal of the stapes was emphatic and general. At the Congress in Rome in 1894, such leading otologists as Politzer, Mouré, and Cozzalino condemned extraction of the stapes as futile and dangerous. At the Paris Congress in 1900, Siebenmann and Batey took exception to this method because of the danger of fatal infection as well as further loss of hearing. The method was also criticized as being without relation to the real nature of the disease.

Floderius, in 1899, after anatomic studies and operative experimentation on the cadaver, arrived at the conclusion that "sound fistulas" can be made at parts of the outer wall of the labyrinthine capsule, at the ampulla of the external horizontal canal or in the bony lamella bounded by the vestibular perilymphatic cistern.

About 1904 Robert Barany suggested the establishment of a labyrinthine fistula in the posterior vertical semicircular canal. This procedure, in his opinion, would give a better result as regards hearing and would obviate the risk of infection. Both objectives were attained, but the result was extremely transitory, lasting only a few days or, at most, about two weeks.

In 1914 Jenkins treated otosclerosis in 2 cases by opening the perilymphatic space of the external semicircular canal. In 1 patient he covered the fistula with a Thiersch skin graft and in the other with a flap from the external auditory canal, obtaining a definite improvement in hearing in both. One patient became totally deaf shortly after the operation. The other patient suffered a diminution in hearing, and for this reason Jenkins abandoned the idea.

Gunnar Holmgren, in 1917, suggested establishing a fistula on the superior vault of the anterior vertical semicircular canal. In 1 patient operated on by this method the immediate result as regards hearing was good but of short duration. Later, Holmgren suggested operating with the aid of the binocular microscope. After a radical mastoidectomy had been performed, the mucoperiosteum of the promontory was elevated to form a flap. A fistula was formed with a drill close to the footplate of stapes and the flap replaced. In 3 of 4 cases hearing improved—2 cases of short duration, 5 in eight months. Later Holmgren made the fistula in the horizontal canal, covering it with mucoperiosteum from the canal. Immediately hearing was good, but later it decreased.

In 1932 M. Sourdille operated in three, four or even five stages. First he removed the posterior membranous external auditory canal, allowing a scar to form; then he performed a tympanomastoidectomy, placing the previously prepared flap over the incus, attic, aditus and antrum, so that the large cavity would be sealed off from the tympanic cavity. In the third stage the auditory canal flap was freed from the promontory of the horizontal canal and the bony canal opened. The flap was replaced so as to cover the fistula. In a large number of patients improvement in hearing was temporary. Sourdille observed that within four to ten weeks the labyrinthine fistula had undergone osseous healing. At a fourth operation the thin bony layer was removed, with more lasting results.

In 1938 Julius Lempert described a one-stage method, by an endaural approach, to produce a fistula in the horizontal semicircular canal, covering it with a flap from the membranous external canal. A flow of enthusiasm spread over the world for fenestration, only to be somewhat dimmed when, in 1952, Samuel Rosen suddenly rediscovered the improvement of hearing obtained by mobilizing the stapes.

Surgical treatment for lesions of the internal ear due to inflammatory invasion has been developed since about 1900. Primary labyrinthitis in children was first described in 1867. Histologic sections of the inner ear were first prepared about 1880. Before Albert Jansen of Berlin first operated for suppurative labyrinthitis, most patients with this disease succumbed to leptomeningitis. Prior to 1907 the indications for the operation were not clear. A positive diagnosis from a preoperative study could seldom be achieved, and in the majority of instances treatment was of necessity instituted upon the basis of a probable lesion, the proof of whose existence depended upon an exploratory operation. During this period the recognized symptoms of labyrinthitis were tinnitus, impaired hearing, reduced bone conduction and lateralization of the Weber to the unaffected ear.

Friedrich considered disturbances of equilibrium, next to impaired hearing, the most constant symptom of labyrinthine disease. He included among these disturbances giddiness upon standing or walking, with eyes closed or open; vertigo even in the position of rest; horizontal nystagmus on looking to the unaffected side, and attacks of nausea and vomiting. Surgical treatment of the labyrinth was placed upon a sounder basis in 1907, after Barany introduced the caloric test and the noise apparatus which enabled one to demonstrate, quickly and positively, complete loss of hearing. The caloric test enabled one to test separately the presence or absence of the static function in each ear. It was then recognized that serious lesions of the labyrinthine wall did not justify complete destruction of the labyrinth, as the labyrinthine endosteum had enough resistance to prevent the penetration of organisms into the interior of the labyrinth. Functional tests made possible not only the diagnosis of labyrinthine suppuration but established the facts as to whether the pathologic process involved the labyrinth partially or in its entirety and led to the classification of the process as circumscribed or diffuse.

Indications for operation, according to Eric Ruttin, depended upon the form of labyrinthitis present, the following types being recognized: circumscribed, diffuse serous secondary, diffuse serous induced, purulent manifest; or acute, latent or chronic, and postoperative or traumatic.

The clinical picture of suppuration of the labyrinth could be substantiated only by the changes observed on the inner wall of the cavum tympanum and an exact functional examination. The earlier indications were diffuse suppurative labyrinthitis and, if this could not be identified with absolute certainty, the presence of intracranial complications. In cases of circumscribed disease of the labyrinth the indications for operation depended largely upon whether or not the circumscribed lesion could heal spontaneously after radical mastoidectomy. A nonfunctioning labyrinth indicated drainage of the internal ear.

The methods of operation for opening the labyrinth were classified into intratympanic and retrotympanic. Technics were proposed by Jansen, Neumann, Hinsberg, Bourguet and Richards. In all cases, regardless of type, a complete radical mastoidectomy was performed before operation on the labyrinth.

The early history of the deaf was not associated with medicine. The Venerable Bede (born 673 A.D.) described a "dumb" youth as taught by St. John of Beverley to repeat letters and syllables, and then words and sentences. At that time this feat was regarded as a miracle. It was not until a physician, Jerome Cardan of Padua (1501-1576), laid down the principle that "Writing is associated with speech, and speech with thought; but written characters and ideas may be connected together without the intervention of sound and the instruction of the deaf and the dumb, though difficult, is possible." A Benedictine monk, Pedro Ponce de León (1520-1584) and then another monk Juan Pablo Bonet, who followed him, wrote a book (1620) containing a manual alphabet, offering, however, an oral method. Others prominent in this early history who contributed treatises were John Bulwer (1644); John Wallis (1652); William Holder (1669); George Dalgarno (1680); Jan Koenraad Ammann (1692); Abbé Charles Michael de l'Epeé (1712-1789); Thomas Braidwood, who founded the first school for the deaf (1760); Jacob Rodrigue Pereira (1715-1780); Abbé Roche Ambroise Cucurron Sicard (the successor to de l'Epee, who founded the National Institute for the Deaf in Paris in 1755); William Thornton (1793); the Rev. John Stanford who established the New York School for the Deaf (1810); Thomas Hopkins Gallaudet, who established the American Asylum for the Deaf and Dumb (later the American School for the Deaf) in 1817, and David Seixas of Philadelphia (1819), and, in the same year, the Jacksonville (Illinois) Asylum for the Deaf and Dumb.

In the years that followed much was accomplished in establishing schools for the deaf as well as teachers of the deaf. An outstanding example was that founded in 1914 by Max A. Goldstein (1870-1942) as the Central Institute for the Deaf in St. Louis. Not only did this type of institute supply education ("Help the handicapped child to help himself"), and the teachers, but it supplied basic research needs.

During World War II both the Army and Navy organized rehabilitation units out of which was born a field of audiology. Personnel required in meeting the medical, social and psychic needs of the hard of hearing were assembled or specially trained. These persons were later absorbed into civilian life and formed a nucleus for spreading a means and a philosophy of management for patients with defective hearing.

(To be continued in February.)

That man can interrogate as well as observe nature, was a lesson slowly learned in his evolution.

The lines of experimental research have sought to determine the functions of the organs in health, the conditions under which perversion of these functions occurs in disease, and the possibility of exercising protective and curative influences on the process of disease.

—Osler

Christian Fenger

MORRIS FISHBEIN, M.D., F.I.C.S. (Hon.)

IN a memorial address delivered to the graduating class at Rush Medical College, April 4, 1902, Dr. Nicholas Senn, esteemed as one of the great surgeons of this century, said of Christian Fenger:

"He loved surgery as a science: he despised it as a trade. He revered the teachings of the old masters, but craved for the brilliant light kindled by modern research and investigation. He was familiar with *the works and deeds of the pioneers*, of our profession, but eagerly looked for and applied modern methods. In his dealings with his clients he was honest. He never used the knife unless he was confident that the operation would benefit his patient. Nothing could entice him from what he considered to be his duty. Money and reputation were, with him, secondary considerations. Fenger was a tireless worker. He seldom allowed himself a vacation. He found the greatest happiness in the operating room, the morgue, laboratory and library."

Dr. Christian Fenger

On Nov. 3, 1900, a testimonial banquet was held in honor of Christian Fenger in the Auditorium Hotel in Chicago. Naturally, *before the distinguished committee* which arranged the banquet proceeded with their plans, they waited on Christian Fenger and asked him whether or not he would cooperate. Finally he said, "Yes, but I am not dead yet." Before two more years had passed, Christian Fenger had been so worn with fatigue that he finally consented to a vacation in California, and after his return from that vacation he died of pneumonia. At his bedside were Frank Billings, James B. Herrick and Henry B. Favill.

The banquet had shown to the medical world the great esteem in which Christian Fenger was held. The famous C. A. L. Read of Cincinnati, president of the American Medical Association, was toastmaster. Dr. John B. Murphy acted as chairman of the committee and presided. Among those who spoke were Dr. W. W. Keen, Philadelphia, who, in an address of elegant diction, presented Dr. Christian Fenger with a silver loving cup. Messages poured in from all of the physicians' organizations of America and elsewhere in the world. Dr. Matthews of Kentucky rendered a tribute. Dr. Nicholas Senn spoke gorgeously, as in the opening quotation of this article, and Dr. William Quine said, "It was in times of peace that dear old

Fenger was found swearing volubly in four languages and grunting fluently in six and teaching surgery to professors of surgery."

The banquet held in Chicago in 1900 marked Dr. Christian Fenger's sixtieth birthday. He had received the Order of the Knight of Dannebrog from the Danish government in 1891. One of the requirements is that the person who receives this decoration must furnish a sketch of his life. Accordingly, on Jan. 1, 1902, while he was staying at the Hotel Coronado in San Diego, California, for his vacation, Dr. Fenger wrote in Danish a brief autobiography. The biographical note that follows is based largely on that autobiography.

Dr. Fenger was born in Breininggaard, Denmark, on Nov. 3, 1840. His father was the owner of this estate. In 1848 his father moved to Nordgaarden near Ringsted, just outside Copenhagen. There the boy entered school and was graduated in 1859, as he says, "with marks of the second grade." He then passed along to the polytechnical school, intending to be a civil engineer, but after one year he yielded to his father's wishes and began the study of medicine. In the winter of 1860 he passed his examinations with special commendation, and in 1863 he passed the first medical examination, with good marks in anatomy, zoology, chemistry and botany. Part of his expenses he earned by teaching in the high school and later also by coaching students in dentistry. The family had twelve children — seven sons and five daughters.

In 1864 Dr. Christian Fenger became assistant physician in Augustenborg Lazareth. At this time the home of his family became a pleasant gathering place for Danish officers, and, when the Danish Army was driven back to Fyen, Fenger acted as assistant physician for a battery at Assens.

When the war ended he returned to his medical studies and passed the examination for the practice of medicine in 1867 with the grade of "Laud." He was now appointed to the position of recorder in the clinic for otology, and he aided Dr. Wilhelm Meyer in private practice, helping in research that led to an article written by Dr. Meyer on adenoids. In 1869 Dr. Fenger became an intern in the Royal Frederick's Hospital, obtaining the position with much difficulty because Dr. Meyer, whom he had assisted, was a German. The chief of surgery in the hospital actually refused to speak to Dr. Fenger during the entire two years of his internship. This is reminiscent of some of the hatred of the Germans in Holland and Denmark, which still prevails since the most recent world war.

While he was an intern, Fenger wrote an essay on a prize topic in medicine, dealing with subperiosteal operations. At the same time he did research on gunshot wounds of horses, using cadavers at the Royal Veterinary College. He devised instruments to aid in finding bullets and taking them out. This research led to a grant from the Royal Danish Ministry of War and enabled him to participate in the Franco-German War of 1871. He was appointed to an international ambulance in Bourtaki-Werden, where he worked until the end of the war, and he wrote a report on the endoscopic study of gunshot wounds.

He then went to Vienna, where he studied pathologic anatomy and surgery, and on his return to Denmark was appointed (in 1871) prosector to the Communehospital. Here he wrote a thesis for the degree of doctor of medicine, entitled "On Cancer of the Stomach," and several other papers. which were printed in the Nordiskt Medicinskt Archiv. The subjects were "Acute Hydronephrosis," "Gonorrheal Rheumatism," "Endoscopy of the Urethra" and

"Stenosis of Ostium Pulmonale." As a result, he received a grant for advanced studies.

In 1875 he was appointed docent in pathologic anatomy, and his professor told him that the students passed examinations with responses just as good as those which they had made under Professor Reiz's direction.

At this time the professorship of pathologic anatomy in Copenhagen became vacant because of the death of Prof. Rasmussen. Dr. Fenger was prepared to compete for the professorship, but the place was given to Prof. Carl Lange without competition. Fenger felt that his road to an *academic career was blocked. He decided* to leave Denmark, and, since he was without funds, he obtained a loan from Ehlers, which he was able to return fourteen years later.

At this point in his autobiography Christian Fenger spends a paragraph in which he argues himself into the position that he never did want to be a professor of pathologic anatomy anyway. He had always been interested in surgery. The positions as assistant surgeons in the two clinics of importance in Copenhagen were not available.

A brother, Dr. Sophus Fenger, had emigrated to Egypt in 1873 and was practicing medicine in Alexandria; therefore, Christian Fenger went to Alexandria to take over the practice of Dr. Sophus Fenger, who had come back to Denmark in order to be married. When Dr. Sophus Fenger returned to Alexandria, Christian Fenger went to Cairo, where he resided with a friend, Dr. Bull. Fenger notes that he received little help from the Danish Consul in Alexandria, but he did get help from the Norwegian and Swedish General Consuls, who helped him to become a member of the Board of Health and later obtained an appointment for him as a district physician in Cairo. While in Cairo he investigated trachoma and made a report to the Egyptian government.

After the war in Abyssinia in 1875, an epidemic disease of horses and mules appeared in Egypt, and all the horses in Cairo died. Fenger was ordered to investigate the disease. He made a series of postmortem examinations and again made a report to the government.

In 1876 Fenger had dysentery, followed by an inflammation of the liver. His work had been so good that the Egyptian government granted him a leave of absence with full pay, and he went to Mentone in Europe to recover. In 1877 the liver disease again appeared, and he was ordered to a temperate climate. In Cairo he had been physician for a part of the American colony, among whom was a Captain General Stone, whose wife was a near relative of the poet Longfellow; the Stones urged him to go to America. He resigned in June 1877 and traveled by ship from Alexandria to Liverpool and then on to New York. An American officer in the Egyptian service, Major Irgens, had urged him to locate in Bloomington, Illinois. Dr. Fenger's own account of this period of doubt and travail is almost heart rending. He received no encouragement to locate in New York and traveled on to Chicago, with the idea of proceeding either to Bloomington or to San Francisco, with the intention of practicing ophthalmology. In Chicago he met a fellow Dane, Dr. S. Jacobsen, who said to him that he might as well locate in Chicago as any other place, especially since his funds were exhausted. At that time Fenger lived in a Scandinavian part of the city and had but a little practice. The big turn came when, in 1878, he secured, by means of borrowed money, a place as physician to the Cook County Hospital. Here he began to give lectures and demonstrations in pathologic anatomy, "a science which was unknown to the physicians there."

In 1879, because many surgeons were away on their vacations, Christian Fenger was asked to do surgical work at the Cook County Hospital, and he served first as pathologist and later as surgeon for twelve or fourteen years. He introduced the antiseptic operative method that had been described by Joseph Lister.

In 1880 Christian Fenger became curator of the Rush Medical College Museum; in 1884, professor of surgery in the College of Physicians and Surgeons, and surgeon-in-chief of the Passavant Hospital and the German Hospital when these hospitals were founded. In 1893 he became professor of surgery in the Chicago Medical College, later in Northwestern University Medical School, and surgeon to Mercy Hospital. In 1899 he left Northwestern to assume the position of professor of surgery in Rush Medical College, in affiliation with the University of Chicago, with a surgical service in the Presbyterian Hospital. He was also surgeon-in-chief from 1894 onward to the Lutheran Tabitha Hospital, founded by the Norwegians of Chicago.

Each year he wrote three or four articles concerning surgical studies. All of these were ultimately presented in "The Collected Works of Christian Fenger," a work in which I helped Professor Hektoen as editor.

In 1898 Christian Fenger was invited to present a report on surgical treatment of the kidneys to the International Medical Congress in Paris. In 1895 he was vice-president of the American Surgical Association, and in 1901 president of the Chicago Medical Society and the Chicago Surgical Society.

This, in brief, is the biography of Christian Fenger as far as his scientific work and his official appointments are concerned. Numerous writings by others concerning this extraordinary man, however, give a better picture of the kind of man he was, and a better estimate of the reasons for his success.

In 1879 Dr. Christian Fenger demonstrated to the Illinois State Medical Society the bacterial nature of acute endocarditis. This was the first such demonstration in America. At subsequent meetings of the Illinois State Medical Society he spoke on the diagnosis of malignant growths and on the excision of the hip and knee joints. He described an operation for carcinoma of the rectum. In 1891 he read a paper on elephantiasis of the scrotum, with remarks on operative treatment; he had removed a mass weighing 22 pounds and extending down to the knee. In view of the vogue of the Listerian technic, he had given the patient two weeks of antiseptic treatment before the operation. In 1894 he read a paper on surgery of the ureter; in 1895, hernia of the bladder, and in 1896, retention from displacement, bending and valve formation in the biliary tract. In 1891, somewhat in advance of his time, he described a case of advanced abdominal extrauterine pregnancy; he concluded that the sooner a patient with ectopic pregnancy was operated upon after the diagnosis was made, the better off she would be. After a good many years the medical profession, including the experts on obstetrics, agreed with that opinion. Reflecting the ignorance of 1880, Dr. Fenger reported with Dr. E. W. Lee on tracheotomy in croup and diphtheria, reporting 30 and 40 cases with 8 recoveries.

In 1865 Dr. Henry M. Lyman had been appointed to the newly created position of pathologist or "curator of the deadhouse" of Cook County Hospital. He worked with a knife, a saw, a chisel and a mallet, and there were no provisions for alcohol or jars for specimens. In 1870 he was succeeded by Dr. Hosmer A. Johnson. Then, in 1873, the office of pathologist at the Cook County Hospital was abolished by the medical staff. On March 31, 1877, the staff decided again to appoint a curator, and this time Dr. I. N. Danforth was appointed. Dr. Ludvig Hektoen has said that Dr. Danforth was the first actually to merit the designation of pathologist. He initiated the practice of demonstrating postmortems to classes of medical students. He had been pathologist at St. Luke's Hospital previously. There, however, autopsies were few and were generally made hastily and surreptitiously and never in the presence of students. In 1878 an upheaval in the staff of the Cook County Hospital terminated the medical board and forced the dismissal of the pathologist. Then came Dr. Christian Fenger, "who in the years 1877-1902 really created pathology in Chicago," in the words of Dr. Edwin F. Hirsch.

While he was an intern in the Cook County Hospital in 1882, Dr. Bayard Holmes had established the first bacteriologic laboratory. This he did in his own bathroom, and he made cultures on gelatin, boiled eggs and coagulated hydrocele fluid of wounds and suture materials. He was a self-taught bacteriologist, and his first bacteriologic article was written in conjunction with Christian Fenger. At that time the Passavant Hospital had no operating room facilities other than a gas stove, a copper washboiler or two, graniteware washbasins and pitchers, a few slop pails and a few glass jars of sea sponges. Dr. Fenger was among the first to recognize the contribution of bacteriology to surgery. Most physicians, according to Bayard Holmes, were completely negative in their attitude toward bacteriologic teaching. They talked about sewer gas as the cause of diphtheria and typhoid fever. As will be told later in this paper, Fenger seized immediately on the value of the microscope and the bacteriologic study in advancing surgery. He was, moreover, one of the first to establish his own library of medical reference. He was the first surgeon in Chicago to perform vaginal hysterectomy and to explore the brain with an aspirating needle. He was the first to demonstrate the ball-valve action of stones in the common bile duct. He is revered as the father of scientific surgery in the Northwest, and he was certainly the father of pathology.

Some Anecdotes.—In the book by Jürgen Thorwald entitled "The Century of the Surgeon" appears a paragraph about Christian Fenger that almost demands quotation:

"Among the Europeans were Christian Fenger, the tough-minded Dane of Passavant Memorial Hospital in Chicago, who knew eleven languages and never learned to speak perfect English. In his passion to investigate diseases and see things with his own eyes, he almost reduced surgery to the dissection of living patients. The patient as a living being interested him so little that he railed at a man who had just died under his hands, after removal of a cerebral fibroma: 'You damned fool, to die just as you were cured!' "

But he performed enormous services in adding to knowledge of disease and "expanding the surgical conquest" to hitherto unexplored areas of the human body.

In a certain medicolegal case in which Fenger was called as expert, a somewhat inexperienced lawyer, seeing an apparently reticent witness, attempted by bluster and noise to cast doubt on such evidence as he might give. The following conversation ensued:

"Dr. Fenger, you are a surgeon, are you not?"

"Yes."

"Have you ever seen an autopsy?"

"Yes."

"Dr. Fenger, have you ever performed an autopsy?"

"Yes."

"Can you say truthfully that you have performed ten postmortem examinations?"

"Yes."

"Dr. Fenger, remember that you are here as a witness, sworn to tell the truth, can you say that you have performed one hundred autopsies?"

"Yes."

At this point the attorney hitched up his trousers, straightened his tie, and said:

"Dr. Fenger, have you performed two hundred autopsies?"

"Yes."

"Five hundred autopsies?"

"Yes."

"One thousand autopsies?"

"Yes."

At this point the attorney feverishly mopped a perspiring brow and said:

"Dr. Fenger, as a sworn witness, knowing the penalty of perjury, can you say that you have performed three thousand autopsies?"

"Yes," said Fenger, "and more too."

At this point the attorney moved an adjournment to a later date.

This knowledge of pathology gave to all that Fenger wrote a note of conviction His "deadhouse" experience was enormous.

In closing his address, Senn said: "We are here to tender our congratulations to Fenger, the scientist; we are here to express our feeling of gratitude to the teacher who taught the young men of our profession in this city how to use the microscope. We are here to honor the surgeon who planted the banner of aseptic surgery in Chicago and unceasingly instructed its followers in the technic of aseptic operations."

In the Collected Works of Christian Fenger is an article entitled "Basal Hernias of the Brain." Like all articles written by Fenger, it is exceptionally thoroughgoing. There is a case reported of which an abstract is given to illustrate with what detail he was wont to study his material:

"*Synopsis.*—Symptoms of obstruction of nose from early childhood. Pedunculated polypus in left posterior nares, apparently somewhat compressible, pedicle located at root of nose. Suspicion of cerebral hernia. Attempt at positive diagnosis by aspiration of cerebrospinal fluid from polypus failed.

"When this had been twice tried with negative results, I concluded that the tumor was an ordinary polypus and not a basal hernia and proceeded to remove the growth in the usual way with the wire snare. The loop was introduced through the left nostril, carried over the tumor, with the left index finger, and tightened with the ecraseur and divided the pedicle. After withdrawal of the snare slight hemorrhage occurred, but neither coughing nor sneezing brought forth the tumor. The hemorrhage soon ceased, but was immediately followed by dripping of a clear, watery fluid of which I collected about a teaspoonful in a watch glass. This fluid, on being boiled, showed the presence of a small amount of albumin, and on the addition of nitrate of silver gave the characteristic white precipitate of chloride of silver. As I concluded that the fluid was cerebrospinal and as I now desired to examine the tumor to make the diagnosis positive, I made the patient vomit, and this brought forth the tumor, as shown in the figure."

Fenger's profanity was a well-known characteristic. It is said to have been picturesque and lucid. The Fenger clinic used to follow a nose and throat clinic in the large amphitheater. One day Fenger arrived early and found a tonsillectomy in progress, with a large amount of bleeding and the consequent littering of the place with gauze. He sniffed, looked around and remarked:

"Here is a lot of blood, but tam little surgery."

The work of Fenger on surgery of the ureters and kidneys is best known. In one instance he had transplanted both ureters into the rectum with successful surgical results, though with a somewhat dubious attitude on the part of the patient, who was somewhat inclined to complain. One morning as Fenger greeted him, the patient started to make his usual complaint.

"Vell," said Fenger, "you're a—ah, tam it—you're a *bird*."

When Christian Fenger was teaching at Northwestern University School of Medicine, a pupil who sat in one of his classes was so impressed by a single incident that he mentions it again and again in his autobiographical writings. That pupil was Dr. Arthur E. Hertzler of Halstead, Kansas. It comes down to a single sentence in which Hertzler said, "One soon is impressed by Prof. Fenger's dictum that 'If you want to learn surgery, you must use your microscope every day of your life.'"

The incident responsible for this dictum follows:

"The study of surgical pathology has been not only a constant study but has been the joy of my life. I started in this way. One day Christian Fenger was operating on a tuberculous knee joint. He had some tissue just removed on a piece of gauze. He came to the railing and I, being the most available, pointed out grey nodules—they were tubercles, and red ones—they were just granulations, he explained. 'See, see,' he repeated, and I said 'Yes, yes' in like tempo. He gave me a horrified look and exploded: 'You don't see nottings,' then in dulcet tones—'but you can learn. If you want to learn surgery you must look through your microscope every day.' He returned to the side of the operating table, then turned and fairly blasted 'Did you hear, I said every day!' I heard and I hear it yet."

That incident was never forgotten by Hertzler, and he repeats it half a dozen times in his various writings. Another incident he repeats concerns an occasion when Fenger asked him, showing him a pathologic specimen, "Now do I know what is in this specimen?" and continued, "I removed at least twelve blocks from the tissue for examination. All I know is just what is in those twelve places."

Hertzler comments, "When I see a specimen even today from which only one block has been removed, I tell myself I know only what that one area shows and hold in reserve any opinion as to what other areas may show."

Arthur Hertzler remembers that when Christian Fenger became particularly annoyed because of his lack of the right words, he would sometimes say "Tam the English language." Though difficult to follow, he was a most impressive teacher, and his greatest value lay in the fact that he was a master of surgical pathology. Frequently Fenger said that the only way to learn surgery was "to beat a path from the operating room to the laboratory." And to learn pathology you must "look through your microscope every day of your life."

Probably Fenger was the first to insist that every bit of tissue removed at operation must be examined microscopically.

He was much given to the use of profanity. Actually his only expletive was "tam." But this he used in multiples, according to the degree of his exasperation. One day, while he was walking across the operating room, his foot hit an object. His face grew livid and he said "Tam it a thousand times." Then he turned to his assistant and said "What was that?" The assistant said that it was only a block of wood used to elevate the table. "Oh," Fenger said soothingly, "tam it only ten times."

When the Sisters of Mercy Hospital said that he would not be allowed to swear in the hospital, he replied, after a moment's thought, "So? I swear then in Danish."

An interesting story of surgery in the 1880's in Chicago is told by Dr. Franklin H. Martin, who decided to do an abdominal section for a tumor of the ovary for a patient who lived on Twenty-Second Street. He had to improvise an operating room and prepare everything for the procedure. He requisitioned Dr. Bishop as an anesthetist, Dr. McArthur as first assistant, Dr. Potter as general utility man, and Dr. Doering to operate the carbolic spray; he invited Drs. Henry T. Byford and Prof. W. W. Jaggard to witness the operation. When the abdomen was opened the tumor could not be delivered through the abdominal wall, because of the adhesions. Dr. Bishop suggested that the contents be evacuated, then the tumor sewed to the abdominal incision and the patient restored to bed. On the third day a secondary operation was performed; the gauze was removed, perforated rubber drainage inserted, the tumor pulled a little farther toward the point of incision. On about the eighth day the temperature of the patient began to rise, with signs of infection. At this time Dr. Christian Fenger was called as a consultant. He came over from the North Side in a "shabby little buggy, drawn by the old horse who (sic) possessed enough horse sense to read his august driver's mind whether he drove with one rein or none. The distinguished scientist was genuinely interested in his young confréres and their predicament. Grunting, and expressing his thoughts in several languages, he firmly blurted out that the temperature must be the result of improper evacuation of the anchored tumor. He advised the use of a Schultz curette, a spoonlike instrument, to scrape off the lining of the tumor and remove any pyogenic material. Bishop produced the instrument from his German kit, and Prof. Fenger, the dear fellow, stayed with us, as always oblivious of the loss of his valuable time, and watched the curettement. Every time we brought out from the depths of the tumor a spoonful of 'pyogenic material,' he enthusiastically expressed his approval. During the manipulation, a little abscess in the seam of the abdominal wall, near the seat of the operation, opened and emitted a teaspoonful or more of pus. This interested our consultant very much. The long process was terminated, and the admiration of our local group for the distinguished Dane was sealed as never before. The patient made an uninterrupted recovery."

This case was reported to the Chicago Medical Society and was accorded a learned discussion by Prof. Fenger. It further received wide distribution in medical journals in America, such as the *American Journal of Obstetrics*, the *Boston Medical and Surgical Journal* and the *Chicago Medical Journal and Examiner*, and in some European periodicals.

Franklin Martin points out, furthermore, that complete removal of the uterus by the lower route was first performed in Chicago by Christian Fenger upon a patient to whom Martin administered the anesthetic.

Dr. Joseph C. Beck first met Christian Fenger when he was sent by his own brother Carl with a message to Dr. Fenger's office. He also saw, some time later, the first operation on the gallbladder done in Chicago by Dr. Christian Fenger. By that time Fenger was so significant in Chicago medicine that his Saturday afternoon surgical clinics in the amphitheatre of the College of Physicians and Surgeons were attended by two or three hundred visiting physicians. Fenger was a poor speaker, halting and hesitating, and often mumbling to himself; "yet never," says Beck, "did anyone leave the amphitheatre until Fenger had finished his job."

And Joe Beck gives, as far as I have been able to find, the only good verbal description of this great surgical leader. "He was short of stature, bald-headed, had markedly protruding eyeballs, and whiskers. In the operating room of the old

P. & S. he always wore high rubber boots, such as duck hunters wear, and a rubber apron. In those days, one must remember, large amounts of water were employed for irrigating at operations and floors were always sopping wet."

And Joe Beck remembers also a day in 1902, when Fenger was president of the Chicago Medical Society. Dr. William A. Pusey was to present the first report in the United States on the use of roentgen therapy for cutaneous and malignant diseases. On this day Fenger was suffering from a very bad cold, but he had got out of bed in order to be present. He made a highly complimentary discussion of Dr. Pusey's work and expressed great enthusiasm of the future of the roentgen ray in medicine. Four days later Fenger died of pneumonia and inflammation of the gallbladder. He was attended in his death, as has been mentioned, by Drs. Frank Billings, Henry Baird Favill, and James B. Herrick.

Dr. James B. Herrick made first place in the competitive examination for Cook County Hospital on April 1, 1888. He chose Dr. Albert I. Bouffleur as his senior intern, primarily because Bouffleur also had graduated from the same school—Rush Medical College—as did Herrick in 1887, and also because Bouffleur was to have as his attending man Christian Fenger. At Fenger's major operation Bouffleur was first assistant and E. J. Mellish second. Herrick had charge of the instruments, while Herman R. Wittwer gave the anesthetics. Herrick also gave anesthetics for the operations of John B. Murphy. In those days a junior intern had to have a clean-shaven face, no doubt to distinguish him from seniors and from the staff. James B. Herrick at that time sacrificed a luxuriant beard and moustache.

In 1887 an orgy of lavish expenditures of money, much of which went into the pockets of the spenders, ended the control of the current board of fifteen county commissioners, and many of them were convicted of corrupt practices and sent to Joliet. A newly elected reform board appointed new hospital authorities, and in a wave of economy patients, interns, and members of the County Hospital personnel had to get along with poor and insufficient food, with a short supply of clinical thermometers and with the use of inferior catgut and poor needles for operations. Older interns and attending men like Christian Fenger sighed for the days of unlimited graft as opposed to "niggardly economy."

On the staff of the Cook County Hospital in those days were Clarence Earle, Christian Fenger and Ludvig Hektoen. George Weaver entered in 1889. The relations between Christian Fenger and Nicholas Senn were most pleasant but to some extent tinged with mutual envy. A story is told of the time when Friedrich von Esmarch, the distinguished surgeon from Kiel, visited the County Hospital. Dr. Fenger acted as host and asked Dr. Senn to be present. As Senn and the great von Esmarch were looking out of the north window of the County Hospital, Esmarch red the large inscription on the front of the tall building facing him: "The College of Physicians and Surgeons." "What college is that?" he asked. "Oh," said Senn, "that is a small, second-rate school that amounts to little. Rush College is the only one that counts."

Senn was at that time only recently come to Rush from the College of Physicians and Surgeons, and Fenger was professor of surgery in the College of Physicians and Surgeons. Once, when someone reported to Fenger a slighting remark that Senn had made and hinted that Fenger ought to resent it, Fenger said charitably, "Oh, you know Senn is a peasant."

The interns of the County Hospital idolized Fenger. For years they came to his house every Thursday evening. These little gatherings were never forgotten by those who had the privilege of attending them. Fenger was host and teacher at the same time. Nicholas Senn said of him that his eccentricities became a source of fascination. He illustrated his lectures by colored blackboard drawings and was himself so enthusiastic that on occasion he held his clinic from two in the afternoon until nine in the evening.

And here are a few sentences gathered from Dr. Herrick's estimate of the great Christian Fenger:

"Dr. Fenger was not alone ethically honest, he was intellectually honest. He possessed this gift of straight thinking to an unusual degree. Paradoxically, it led him at times into embarrassing pitfalls. . . . At times it seems as though he was almost 'suffocated by erudition.' . . . Dr. Fenger advocated and practiced thoroughness; he meticulously evaluated symptoms and signs, reviewed pertinent literature, and considered indications for and against various methods of treatment. In accord with his belief in thoroughness, some of his operations were marvels in completeness, for instance, his removal of tuberculous glands of the neck or carcinomatous glands in the axilla. But, at times his zeal for thoroughness ran away with good judgment."

And, after citing several instances in which Fenger's work in the abdomen and elsewhere was too thorough, Dr. T. A. Davis commented: "Really, Dr. Fenger is too thorough a surgeon for the abdomen."

Dr. James B. Herrick says this of his personality: "He was cultured and refined; an unusually good judge of paintings and sculpture. He was humble, not puffed up; was willing to learn from younger men. He was essentially gentle and kindly, yet capable of wrath when his motives or his views were, as he thought, unfairly attacked."

Among the great surgeons in Chicago at that time were Nicholas Senn and John B. Murphy, both of whom always acknowledged their indebtedness to Christian Fenger. They were great teachers and practitioners, yet they left no successor who could justly be called of the Senn or the Murphy school. Fenger, however, left a great group of pathologists, surgeons and physicians who looked up to him as their great teacher. The young men whom Fenger trained lived to make their names the greatest of the great names of Chicago medicine. Fenger had not yet, in 1902. really become a national figure. The great dinner given him in 1900 was given to a man who had become a prophet in his own country. Perhaps, had he lived longer, his name would have echoed throughout the world.

As one looks through contemporaneous histories of medicine and of surgery, the name Fenger, a great pioneer in pathology. is bacteriology and in surgery, is hardly mentioned.

I have quoted the words of Jürgen Thorwald in "The Century of the Surgeon." Here is a brief statement in Ralph Major's "History of Medicine." After a few lines describing the beginnings of Christian Fenger, he says: "Fenger gravitated to surgery and soon became one of the outstanding surgeons in Chicago, a careful and meticulous operator with an unrivaled knowledge and familiarity with pathological conditions. As a man, he was greatly respected and beloved. He taught surgery for many years at Rush Medical College."

The great names in the history of surgery in the United States—such names as those of McDowell, of Sims, of Samuel D. Gross, and of Wyeth—reflect perhaps the insularity of medicine in the United States. Quite a long time was required before medicine really spread from the eastern coast into the Midwest and, more recently, to the West Coast. The names

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New Books

BOOKS RECEIVED

The following books have been received by the Editor; they will be reviewed critically as space and facilities permit. Omission of more extended review, however is not to be taken as criticism of the merit of the book.

Clinical Nuerosurgery: Proceedings of the Congress of Neurological Surgeons. Edited by Robert G. Fisher, Lee Christopherson, Robert Green and William Mosberg. Baltimore: The Williams and Wilkins Company, 1958. Pp. 289, with 125 illustrations and 12 tables.

Symposium on Glaucoma. Edited by William B. Clark. St. Louis: The C. V. Mosby Company, 1959. Pp. 314, with 99 illustrations.

Spinal Cord Compression. By I. M. Tarlov. Springfield, Ill.: Charles C Thomas, Publisher, 1957. Pp. 147, with 41 illustrations.

Le Diagnostic du Cancer d'Estomac a la Periode Utile (Diagnosis of Carcinoma of the Stomach at the Time Most Favorable for Treatment). By Rene A. Gutmann. Paris: G. Doin et Cie, 1956. Pp. 257.

Operative Surgery. Edited by Charles Rob and Rodney Smith. London: Butterworth & Co., Ltd.; Philadelphia, F. A. Davis Co., 1956. Vols. 1 and 2 of 8 (plus index). Profusely illustrated.

Trattamento Chirurgico Conservativo della Tuberculosi Urinaria (Conservative Surgical Treatment of Urinary Tuberculosis). By C. Chiaudano and V. Giongo. Edizioni Minerva Medica, 1959. Pp. 349, with 63 illustrations. *Reviewed in this issue.*

Functional Bracing of the Upper Extremities. By Miles H. Anderson. Springfield, Ill.: Charles C Thomas, Publisher, 1958. Pp. 463. Illustrated.

The Clinical Management of Varicose Veins. By David Woolfolk Barrow. New York: Paul B. Hoeber, 1957. Pp. 167, with 70 illustrations.

Trauma. By Harrison L. McLaughlin. Philadelphia and London: The W. B. Saunders Company, 1959. Pp. 784. Illustrated. *Reviewed in this issue.*

Chirurgie Infantile d'Urgence (Emergency Surgery on Children). By Marcel Fèvre, with the collaboration of Denys Pellerin. Paris: Masson et Cie, 1959. 2nd ed. Pp. 718, with 201 illustrations. *Reviewed in this issue.*

Pathology and Surgery of the Veins of the Lower Limbs. By Harold Dodd and Frank Cockett. Baltimore: The Williams & Wilkins Company, 1957. Pp. 462, illustrated.

Cancer; Diagnosis and Treatment. Edited by John B. Field. Boston: Little, Brown & Company, 1959. *Reviewed in this issue.*

Le Cancer de la Prostate; Son Diagnostic, Son Traitement Radiumthérapique (Cancer of the Prostate; Diagnosis and Radium Therapy). By Raymond Darget. Paris: Masson et Cie, 1958. Pp. 160, with 85 illustrations. *Reviewed in this issue.*

of Crile, Dandy and Mayo have spread around the world. William W. Keen was world-renowned. Perhaps some of the failure to appreciate the greatness of Christian Fenger was due to the paucity of medical communications in the period in which he laid the foundations of surgery in the Midwest and also to the fact that he traveled but little after he once settled in Chicago. Yet the men who knew him and worked with him, the men whose names are of such great lustre, Billings, Murphy, Senn, Herrick, Hektoen, have cast so great a light on medicine throughout the world that their patron saint Christian Fenger will never be forgotten.

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* * *

The scientific investigator who, as Cicero counseled, "strives to render himself strange to the familiar," converts such curiosity into a guide in his work. In finding his way through the jungle of fact, the investigator must be guided by his imagination as a navigator is guided by the distant stars. Imagination can be a torch to illuminate his path, but he must always be ready to recognize that, as Huxley said, "the tragedy of all inquiry is that a beautiful hypothesis may be slain by an ugly fact." He must realize that not every experiment ends in achievement, and he must appreciate the value of negative data. If, besides, he admits that his research is founded upon the work of his predecessors and feels himself at one with them in time and space, his investigation will then become the mission, direction, and glory of his life.

—*Marti-Ibañez*

of malignancy and method of invasion via the blood and lymph streams is discussed. The author points out that for those with early perineural lymphatic involvement the prognosis is poor. Changes in the histologic structure following hormone and radium therapy are described. Postoperative histologic examination of specimens of the hard, nodular areas involved in a chronic inflammatory process or in glandular lithiasis fail to reveal carcinoma, but the author considers these premalignant.

An extensive chapter is devoted to treatment. The author does not favor open prostatectomy. He points out that accessibility is limited via the perineal and retropubic routes and comments on the greater exposure by the sacral or ischiorectal approach, which has not been sufficiently developed. He mentions the technical difficulty involved in the removal of advanced prostatic carcinoma. Prof. Darget is convinced that he can treat prostatic cancer efficaciously by hormones, orchiectomy and transurethral resection for drainage and radium therapy, both as curative and palliative measures. Direct and indirect hormone treatment, aimed at counteracting the action of androgens in the testis itself and its accessory action in the suprarenal gland and hypophysis, is discussed. Castration is poorly accepted by the average patient, but a number submit to orchiectomy with intratesticular implantation of estrogen pellets (100 mg. of stilbestrol). Experiments on the rat show that stilbestrol implanted in the testis provokes sclerosis of the seminal gland—a veritable physiologic castration.

Surgical treatment is divided into (1) minor, i.e., transurethral resection for relief of retention of urine and for securing biopsy specimens before and after radium treatment, and (2) major, aimed at destruction of the neoplasm by radium therapy (the author has given up surgical ablation). In discussing radium therapy, he compares its advantages and disadvantages with those of isotope therapy. He describes methods in which radium is used to destroy the neoplasm entirely and also for palliative purposes. He explains the technic of its application via natural channels, the urethra or the rectum. Two or three needles of 3.33 mg. of radium are placed on end in a catheter inserted in the prostatic portion of the urethra and left in place three to four days. Radium is also implanted into the prostate by a transvesical, perineal or ischiorectal surgical approach. Isotopes are introduced into the seminal vesicles via the spermatic ducts.

The author points out statistics on the results obtained by hormone therapy alone, by inclusion of intratesticular hormones and by various methods of radium therapy. It is interesting to note that, of 66 patients whose cases were reported up to 1955, 36 lived from three to eleven years after treatment (33 were clinically cured; in a number of these cases the results were confirmed by histologic study). He considers indications for different forms of treatment: hormone therapy as long as it proves efficacious and radium therapy in all its forms. The precise type of tumor for which each approach is indicated is mentioned. The prognosis is better than it was twenty years ago. It depends on the evolution of the various histologic types, the location of the growth in the prostate, the response to hormone treatment and the age of the patient.

Prof. Darget's scholarly book is particularly well illustrated and documented. The chapter on radium therapy is original and includes its use for entire destruction of the carcinomatous growth as well as for palliative treatment. His wide experience has led Prof. Darget to admonish those wont to employ extensive radical operations: "Patients prefer to live comfortably with their ailments than to die cured." Those interested in the problem of prostatic carcinoma will profit much from reading this timely book.

CHARLES PIERRE MATHÉ, M.D.

Treatment of Cancer and Allied Diseases: Volume III. Tumors of the Head and Neck. Edited by George T. Pack and Irving M. Ariel. New York: Paul B. Hoeber, Inc. 1959. 2d ed., Vol. 2. Pp. 781, with 1,028 illustrations.

Seventy authors have contributed to this

Le Cancer de la Prostate; Son Diagnostic, Son Traitement Radiumthérapique (Cancer of the Prostate; Diagnosis and Radium Therapy). By Raymond Darget. Paris: Masson et Cie, 1958. Pp. 160, with 85 illustrations.

Professor Darget has written a clear, concise and excellent treatise on carcinoma of the prostate, based on thirty years' experience. With great precision he outlines diagnostic methods that will aid in detection of the early neoplasm. Present-day treatment, including transurethral resection, prostatectomy, surgical and palliative radium therapy, hormone therapy, castration, etc., is discussed in detail. The beneficial results of radium therapy, perfected and used extensively by Prof. Darget since 1936, are reported. This book is a plea for greater use of surgical radium therapy.

The author points out that there is no difficulty in diagnosis when the patient is suffering from retention and dysuria, and when rectal palpation reveals an enlarged, nodular, asymmetric, stony-hard prostate. Early diagnosis—at which time efficacious therapy can be instituted—should be the goal. Carcinoma is present in 14 per cent of specimens removed at operation for prostatic hypertrophy. Prof. Darget advises rectal palpation with the aid of light anesthesia, with or without a urethral sound in place, to facilitate fixation of the prostate and periprostatic area. Roentgen examination includes urethrographic study. Excellent roentgenograms are shown, revealing the characteristic saber-shaped shadow caused by encroachment of carcinomatous degeneration in the hypertrophied prostate. Laboratory examination includes hormone tests (ketosteroids), Papanicoloau stain for carcinoma cells and biopsy by punch or transurethral resection.

Exact determination of the extent of prostatic carcinoma encroaching on the ureters and causing back pressure on the kidneys is demonstrated by excretory urographic examination. Bony metastases, present in 70 per cent of patients, are depicted in roentgenograms showing the osteolytic, osteoblastic (ivory spine) and osteoblastic mixed pseudopagetoid type. Differential diagnosis is discussed in detail. Roentgenograms are routinely taken to detect pulmonary metastases. Careful examination is done to determine whether there is involvement of the nodes in the inguinal region and the iliac fossa.

A chapter written in collaboration with Dr. R. Ballanger is devoted to anatomic aspects of the prostate and routes of surgical approach. The inferior perineal surface, the posterior (ischiorectal of Voelker), the anterior (Millan), and the superior (transvesical approach of Fuller and Freyer), are discussed. The lateral surfaces of the prostate are described and depicted in drawings. The hilum and vascular supply of the prostate and its relation to the seminal vesicles and the pelvic portion of the ureter are considered. Understanding of the distribution of lymphatics is enhanced by the research work of the authors.

An enlightening chapter on anatomicopathology, written in collaboration with Dr. Henry Leger, reviews the relation of the configuration of the prostate, its embryologic development and hypertrophy to the development of carcinoma. Most authors agree that carcinoma begins in the caudal posterior portion of the prostate and is activated by hormone imbalance consecutive to the decline of sexual activity. Precarcinomatous lesions are depicted. Popularly accepted aspects are described in detail: the epithelioma with small acini, the adenoepithelioma, the typical adenoma (adenocarcinoma), the cribriform type of epithelioma, the atypical carcinoma and the occult carcinoid type. The relation of the histologic type of carcinoma to the degree of malignancy and method of invasion via the blood and lymph streams is discussed. The author points out that for those with early perineural lymphatic involvement the prognosis is poor. Changes in the histologic structure following hormone and radium therapy are described. Postoperative histologic examination of specimens of the hard, nodular areas involved in a chronic inflammatory process or in glandular lithiasis fail to reveal carcinoma, but the author considers these premalignant.

An extensive chapter is devoted to treatment. The author does not favor open prostatectomy. He points out that accessibility is limited via the perineal and retropubic routes and comments on the greater exposure by the sacral or ischiorectal approach, which has not been sufficiently developed. He mentions the technical difficulty involved in the removal of advanced prostatic carcinoma. Prof. Darget is convinced that he can treat prostatic cancer efficaciously by hormones, orchiectomy and transurethral resection for drainage and radium therapy, both as curative and palliative measures. Direct and indirect hormone treatment, aimed at counteracting the action of androgens in the testis itself and its accessory action in the suprarenal gland and hypophysis, is discussed. Castration is poorly accepted by the average patient, but a number submit to orchiectomy with intratesticular implantation of estrogen pellets (100 mg. of stilbestrol). Experiments on the rat show that stilbestrol implanted in the testis provokes sclerosis of the seminal gland—a veritable physiologic castration.

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Seventy authors have contributed to this massive tome, whom the editors sought in all parts of the world. The best knowledge of specialists in South Africa, Canada, England, Sweden, Denmark and France has been added to that of authorities in the United States.

The volume is concerned exclusively with tumors of the head and neck (exclusive of brain tumors); tumors of the mouth, pharynx, nose and sinuses; tumors of the ear, the eye, the larynx, the neck and the thyroid and parathyroid glands.

All current therapeutic technics, both radical and conservative, are described. The discussion is thorough, the directions clear and practical. The illustrations are particularly fine, the bibliography impressive and the index comprehensive.

The book is a sort of world symposium of knowledge in its particular area and an important addition to any medical library, as well as to that of the specialist.

MAX THOREK, M.D.

Trauma. By Harrison L. McLaughlin. Philadelphia and London: The W. B. Saunders Company, 1959. Pp. 784. Illustrated.

Two world wars and many lesser military incidents, the spectacular increase in the number of automobiles on the highways of the world and the mushroomlike growth of industry, with millions of workers employed, have resulted in countless numbers of traumatic injuries of every kind and description. The twentieth century may be recorded in history as the Century of Trauma. Harrison L. McLaughlin is Professor of Clinical Orthopaedic Surgery, College of Physicians and Surgeons, Columbia University. His contributions as a writer and lecturer on the treatment of various injuries have brought him to the forefront as an authority on trauma.

This is a reference book well illustrated with photographs, line drawings and roentgenograms. It is divided into five major categories:

Part 1, General Considerations, includes a chapter entitled "The Response to Injury" and one entitled "General Principles in the Treatment of Trauma," both by McLaughlin. Chapters dealing with infection, thermal trauma and vascular injuries are contributed by David V. Habif, Robert H. E. Elliott Jr. and Jere W. Lord Jr.

Part 2 deals with trauma to the upper extremity; Part 3, with trauma to the lower extremity; Part 4, with injuries to the trunk, and Part 5, with injuries to the head and special senses.

Approximately half of these chapters were written by McLaughlin. The others have been prepared by authors who are, or have been, members of the attending staff of the Columbia-Presbyterian Medical Center in New York City and the Faculty of the College of Physicians and Surgeons of Columbia University. The book is highly readable and presents, in a clear and concise manner, the various traumatic lesions, their diagnosis and treatment. It should be in the library of all surgeons interested in the care of traumatic injuries.

EDWARD L. COMPERE, M.D.

Bleeding Esophageal Varices; Portal Hypertension. By Hirsch Robert Liebowitz and Louis M. Rousselot. Springfield, Ill.: Charles C Thomas, Publisher, 1959. Pp. 986, with 178 illustrations.

This monograph deals with a highly technical and specialized subject. It is the outgrowth of investigation of bleeding varices associated with cirrhosis of the liver. Intensive study of portal hypertension is relatively young, but a vast amount of information has been collected and categorized in the past two decades. Although some minute differences of opinion still exist as to hepatic vascular anatomy and hepaticohemodynamics, this book presents much of practical value. For particular commendation must be mentioned Chapter 27, "Radiological Diagnosis of Esophagogastric Varices."

There are excellent references at the end of each chapter. Since the mortality rate of bleeding varices associated with cirrhosis of the liver is high and the incidence of chronic hepatic disease and portal hypertension seems to be increasing, the book should interest the practicing physician, surgeon and student alike. This monumental work can be recommended.

PHILIP THOREK, M.D.

Cancer; Diagnosis and Treatment. Edited by John B. Field. Boston: Little, Brown & Company, 1959.

This book presents a summary of the present status of knowledge about carcinoma, its diagnosis and treatment. The list of contributors is an honor list of great living surgeons.

There is no question that, as the chapters are written by different persons, no homogeneous aspects of the entire subject are presented. Each author discusses the problems from his own point of view and suggests the treatment which, in his own hands, appears to be most satisfactory. The experienced physician reading this book will, therefore, disagree with some of the statements made. This does not detract from the value of the volume, which in general is excellently written, contains beautiful reproductions and is, in the opinion of this reviewer, a "must" for the library of any modern physician.

WERNER F. EISENSTAEDT, M.D.

The Preparation of Medical Literature. By Louise Montgomery Cross, with a chapter on charts and graphs by Shirley Baty. Philadelphia: The J. B. Lippincott Company, 1959.

This one-volume handbook on the writing of medical books and papers is a professionally competent guide for the man who wants to present his work in the most acceptable manner to the medical editor and, through him, to the reading public. It is more than that—it tells him how to gather his material, how to develop the project, and technical aspects of writing, as well as the use of capitalization, numbers, spelling, abbreviations, etc. Illustrations, tables, charts, photographs and the like are discussed, as well as the highly important matters of borrowing, permission and copyright. The relation between author and editor is clarified. An appendix in two sections gives valuable information about annuals, yearbooks and reviews, with abbreviations of the names of contemporary journals. The text will save the writing doctor much time and effort in the correct preparation of his manuscripts.

M. T.

Chirurgie Infantile d'Urgence (Emergency Surgery on Children). By Marcel Fèvre, with the collaboration of Denys Pellerin. Paris: Masson et Cie., 1959. 2d ed. Pp. 718, with 201 illustrations.

The first edition of this fine French text appeared in 1939, just before the war. Now it has been completely revised to take cognizance of the changes in emergency operations on children, made possible by the modern anesthetics, sulfamides and antibiotics that have so greatly reduced risk and mortality in pediatric surgery. These developments have so changed the picture of surgical therapy for the newborn that the chapter "Congenital Malformation" was completely rewritten.

In the years since the war, with the widespread use of vaccines, the surgical aspect of typhoid fever has almost disappeared in France, necessitating a different approach to this problem. Pneumococcic peritonitis has become rare.

Consequently, the book has been extensively revised and enriched by new knowledge. It is intended especially for the nonspecialist and the practitioner in outlying areas removed from city clinics. The text is written from the author's own observations and is well illustrated. The subject matter includes all phases of problems in infants and children that call for emergency surgical intervention. It would be well if this volume were translated into English, for it could serve its primary purpose as well here as in France.

MAX THOREK, M.D.

Trattamento Chirurgico Conservativo della Tubercolosi Urinaria (Conservative Surgical Treatment of Urinary Tuberculosis). By C. Chiaudano and V. Giongo. Edizioni Minerva Medica, 1959. Pp. 349, with 63 illustrations.

This book on the surgical treatment of urinary tuberculosis consists of a lengthy report presented at the Thirty-First Italian Congress of Urology at Palermo in September 1958. It stresses the fact that conservative surgical treatment of renal tuberculosis aims at conserving the greatest possible amount of healthy and medically curable renal tissue. Better results are obtained by improved technic and careful choice of the time for operation (avoiding prematurity or overlong delay).

Part 1 deals with the evolution of tuberculosis of the urinary tract during the preantibiotic era. The importance of the lymphatic system in the dissemination of the disease is stressed. Photomicrographs depict the effect of tuberculous lesions on the vessels of the kidney. The majority of parenchymal lesions can be cured by medical treatment; those which do not respond consist of tuberculous cavities associated with ulceration and sclerosis of the isthmus of a calyx. "Undesirable" sequelae of healed disease of the urinary tract—a small, contracted bladder, reflux, cicatricial stenosis of the terminal portion of the ureter, sclerosis of the vesical neck, etc.—are discussed. Criteria for evaluating healing and stabilization of tuberculosis of the urinary tract are listed. Conservative surgical treatment of the kidney eliminates tuberculous foci, preserves healthy parenchyma and makes cure by medical treatment feasible.

Part 2 is devoted to conservative surgical therapy, consisting of resection of tuberculous lesions: unilateral, bilateral or involving a solitary kidney. This field is limited, and such procedures were resorted to in only 1.7 per cent (47) of the author's 1,000 cases. A long course of sanatorium medical care (seven to eighteen months) is necessary to transform a generalized into a localized disease before surgical treatment is feasible. Prerequisites for operative intervention are stabilization of the disease and integrity of the excretory urinary tract. Conservative operation is indicated for (1) ulcerative lesions refractory to medical treatment; (2) cavities with stenosis of the outlet, and (3) noncommunicating cavities (the greater number of cases). If one-third or more of the kidney is involved in extensive unilateral disease and is refractory to medical treatment, nephrectomy is still the choice for effecting rapid cure. Conservative operation, partial resection, extirpation of tuberculous cavities, "spelectomia," drainage and local instillation of antibiotics, "spelcostomia," nephrostomy, etc., are mandatory for the solitary kidney.

Arteriographic study is a great aid in diagnosis. Furthermore, it permits one to evaluate the quantity of renal tissue that can be preserved. There is a table of data on 521 partial resections of the kidney for tuberculosis, showing a mortality rate of 1.7 per cent (9 deaths). Conservative operations should be performed only after the disease is controlled. Chemobiotic treatment, however, may accelerate cicatricial contraction of the lower portion of the ureter.

Part 3 deals with the "undesirable" sequelae of healed tuberculosis of the urinary tract, stenosis of the terminal portion of the ureter, the vesical neck, reflux and the contracted bladder. The clinical course and diagnosis by cystoscope and roentgen study are described. Stenosis of the terminal portion of the ureter is treated with dilating catheters, external ureterotomy with retrograde ureteral dilation, retention ureteral catheters (Darget), laterolateral ureterocystanastomosis, ureterocystoneostomy (Casati-Boari, Roxy), the transvesical approach (Puigvert, Fey and Boeminghaus), and the extravesical approach. The advantages and disadvantages of various methods and results are discussed. Surgical treatment of stricture of the ureteropelvic junction is also discussed. Ureterocolostomy is indicated in cases of severe contraction of the pelvis.

Advanced contraction of the bacteriologically cured tuberculous bladder, usually occurring in patients with only one kidney, is treated surgically by an intestinal graft. Enterocystoplasty replaces the bladder with a contractile reservoir for urine, preserves ureteral function, favors regression of ureteropelviectasis and restores the secretory function of the kidney. It is not followed by electrolyte imbalance or ascending infection of the kidney. Ureteroileocystoplasty is preferable to ureterocutaneous and ureterointestinal anastomosis. The technic of ileocystoplasty is described in detail, and the illustrations are excellent. In the authors' opinion, advanced hydroureteronephrosis is no contraindication. Ileocystoplasty is justified even if there are clinical signs of renal failure in patients nephrectomized for tuberculosis and suffering from pollakiuria, who do not improve with medical treatment.

This is a most thoroughgoing work and brings the treatment of tuberculosis of the urinary tract up to date. Since the advent of chemobiotic therapy the treatment has changed, and the authors point out the importance of prolonged medical sanatorium care in order to make feasible conservative surgical intervention for many more patients. They stress the importance of preserving the greatest possible amount of healthy renal tissue. Treatment of "undesirable" sequelae accompanying chemobacteriologic cure is described in detail.

The book is extremely well illustrated, and contains a complete bibliography. Summaries appear in English, French, German and Italian. It is an excellent guide to the treatment of tuberculosis of the urinary tract.

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This work is a critical analysis of the cases of 40 patients with carcinoma of the cervix (service of Professor J. Magendie), all of whom were treated by irradiation prior to radical hysterectomy *en bloc*, including removal of pelvic lymph nodes and adipocellular tissues.

The standard technic (Meig's) was employed in 32 cases. In 6 the usual hysterectomy was accompanied by simple removal of the adnexae and by cellulolymphatic curettage. In 2 the latter was not feasible. Preliminary irradiation consisted of placing five tubes of 10 mg. radium bromide (63.5 millicuries) in the cervix, five tubes in the uterus and two tubes in the lateral cul de sac; all were left in place for seven days. When roentgen therapy was employed, it was delivered in fifteen to twenty doses totaling 6,000 to 8,000 r. The various reactions following this therapy are described.

The case histories of the 40 patients are presented in detail. The mortality rate was nil. The author attributes the smooth postoperative course to gentle technic, characterized by careful dissection and rigid hemostasis, on the anti-infectious action of preliminary irradiation therapy; dependent drainage through the vagina; walling off of the pelvis, and systematic prophylactic streptomycin and penicillin therapy (five days).

Urinary complications occurred in 14 of the 40 patients (35 per cent): in 2, accidental section of the ureter (1 relieved and the other requiring reimplantation of the ureter into the bladder [Boari technique]); in 5, cystitis and infected small hydronephrosis; in 1, temporary stenosis of the ureter; in 1, permanent stenosis of the ureter, requiring nephrectomy; in 2, urinary fistulas due to stenosis of the lower part of the ureter, requiring reimplantation into the bladder, and in 1, vesicovaginal; in 1, ureterovaginal, and in 1, radium necrosis of the bladder. These morbid results were due to complications caused by trauma to the ureter and depended upon the type of operation, the stage of the carcinoma, the resistance of neoplastic cells to radium therapy and the presence of metastases in the cellulolymphatic tissues of the pelvis.

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According to Prof. Magendie and other surgeons, preliminary irradiation followed by radical *en bloc* removal of the uterus and the adjacent lymphatic and adipocellular tissue is the method of choice for early uterocervical carcinoma. They point out that results noted four years after treatment promise an increased survival rate of 10 per cent!

The case histories are meticulously presented, including treatment, complications and results. The bibliography is complete and the text well presented, and the details of the studies are listed in tables.

CHARLES PIERRE MATHÉ, M.D.

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In July 1753 Percival Pott and Hunter were elected Masters of Anatomy at Surgeons' Hall. Hunter was then twenty-five years of age; he had spent five winters in the anatomy school in Covent Garden and three summers studying clinical surgery in hospital. It seems almost incredible that he should have been elected Master of Anatomy at the same time as Percival Pott, who was much his senior and already on the staff at St. Bartholomew's. Clearly he had made very good use of his five winter sessions of anatomy. Possibly, too. William Hunter's influence counted for something in the election.

The events of the next two years proved to be a turning-point in John's career. The fact that he had now become Master of Anatomy at Surgeons' Hall is evidence enough that his position as an anatomist was well established. but this did not offer sufficient scope for an energetic man of his restless temperament. and the choice at last had to be made between medicine and surgery. In the space of the next three years his name appears in the records of two institutions. St. George's Hospital, London, and St. Mary Hall, Oxford. Ottley places his stay at St. Mary Hall first. in 1753; but the evidence given by Peachey and Sir D'Arcy Power seems to point to the fact that Hunter joined St. George's as a student before going to Oxford, and that the short sojourn as a gentleman commoner at St. Mary Hall. now incorporated with Oriel College. came in the middle of his student's career at St. George's—that is in 1755. The entry in the Oxford Registrum Scriptionum for the fifth of June 1755 runs, "Johannes Munter, ex aula santae marae virginis, Arm Fil." The last two words. signifying that Hunter was the son of a family with an armorial crest, are considered by Peachey to be incorrect, because John Hunter had really no just claim to armorial bearings; but whatever may have been his personal responsibility in the matter in later life. it is likely that as an undergraduate he accepted the family claim in good faith. Indeed he had such a scorn of pretence and snobbery and such a scrupulous regard for truth that it is difficult to believe that he wilfully erred in the matter.

—*Gloyne*

Abstracts from Current Literature

Carcinoma of Colon and Rectum. Gregg, R. O., Chamberlain, B. E., and Vercillo, A. A., J.A.M.A. 170:143, 1959.

Case records of 623 treated patients with carcinoma of the colon and rectum were reviewed by a committee on surgical management in central New York State.

The results are reported in the form of this article. Five-year survivals were reported in 35 per cent of the entire series and in 51 per cent of all patients who left the hospital after curative resection. Only 50 per cent of all malignant tumors could be palpated or seen by sigmoidoscope. An abdominal mass was present in 30 per cent of the cases, but the presence of a mass in either flank did not materially change the prognosis. Anemia was less frequent than is usually reported in other series. Intestinal obstruction was the biggest factor in operative mortality, and the operative mortality rate in these cases was 22 per cent. In most cases of obstruction the symptoms had been present for three months. The investigators observed no particular difference in colons prepared with sulfonamides or broad-spectrum antibiotics, either alone or in combination. A most important prognostic feature was the age of the patient. The death rate from carcinoma in five years, among the group in whom resection for cure was carried out, progressively fell with each decade, from 54 per cent in the fourth decade to only 21 per cent in the eighth.

Anterior resections, when technically feasible, is the operation of choice for most lesions in the upper part of the rectum or the lower part of the sigmoid flecture.

James H. Erwin, M.D.

Functional Diseases. Groen, J. J., Acta Med. Oriental., 16:3/4:49, 1957.

This work was supported by a grant from the Rockefeller Foundation.

Functional diseases are disturbances of one or more functions of the organism in which morphologic changes are *not detectable*. No absolute difference exists between functional and organic disease. Both are disturbances of the normal function of the organism in its adaptation to changes in the environment. For practical reasons, however, a distinction has found general acceptance in medicine. Functional disorders should be regarded as medical manifestations of a failure of the social (interhuman) adaptation of the individual person to his position in the family, in the work situation and in the community. This failure is actually considered the origin of the illness.

With the triumphal advance of medicine in the past hundred years, the teaching of medical students has become a training in the use of exact methods for the study of organic disease exclusively. Knowledge of functional diseases has advanced very little, if at all. Patients with a functional condition, if ever admitted to a hospital for the exclusion of an organic illness, are discharged and quickly forgotten as soon as their chemical and physical "check-up" ends in "negative findings." This indifference of hospitals and research institutes toward the study of functional disease is the more inexcusable, since they are among the most frequent disorders in our time and culture. In up to 50 per cent of all patients who visit general practitioners, no signs of organic disease are present. The specialists see fewer such patients, but still their number is relatively large. These patients require at least as much time and effort from the physicians as do those with organic disease.

The most common functional conditions are those in which pain, mainly in the head, abdomen or the back, dominates the clinical picture. It should be noted that functional diseases and hysterical manifestations (especially *hysterical pain*) are *not identical*. Disorders with purely psychic symptoms, such as compulsions, phobias, hysteria and the psychoneuroses, should also be considered separately, as should the so-called psychosomatic disorders, especially such psychosomatoses as peptic ulcer, essential hypertension, ulcerative colitis and hyperthyroidism, which present definite anatomic lesions besides a psychogenic origin.

There is no fundamental difference between mental disorders, functional diseases and psychosomatic disturbances. In fact, these conditions seem closely related, at least etiologically. The difference lies in their symptoms, for which reason a distinction between them is advantageous.

As to the meaning of neurosis, the author offers the following positive definition: Neurosis is a disturbance of the functioning of the organism, characterized by a conflict between the patient's personality structure with his inborn and acquired tendencies (drives or potencies), and the opportunities or requirements offered by his environment to act according to these tendencies. From this point of view functional disorders come under the broad heading of neurosis.

Before a disease is diagnosed as functional, the following four conditions must be fulfilled.

1. The symptoms and signs should fall within one of the known clinical pictures of a functional disorder.

2. The clinical and laboratory examinations should exclude the presence of organic disease.

3. The existence of a conflict between the patient's personality and his environment should be established by exploring activities on his part related to his family, his work and his place in the community. A person who is frustrated in two of these three functions is in a precarious situation. When there is no gratification of any of the three, he is maladjusted, a social, psychic or physical form of illness will develop. This schematic concept of the individual person's psychic and somatic equilibrium has proved helpful in practice.

4. Observation of the course of the disease should establish the diagnosis further. During treatment, no new symptom or sign that seems at variance with the diagnosis of functional disease should be neglected.

The present status of therapy for functional disorders is unsatisfactory. Unfortunately, psychotherapy is still one of the least satisfactory forms of medical activity, and the objective proofs of its efficacy are scarce indeed. A general outline of the principles of a rational treatment is given by the author, including suggestions for a simple, pedagogic form of psychotherapy.

Functional disorders are responsible for much human suffering and economic waste. There is every reason to open the fight against these diseases with as much thoroughness and tenacity as has proved so successful in the campaigns against tuberculosis, infant mortality and poliomyelitis. Promotion of research and improvement of medical practice are indispensable to progress in this field. Clinical and statistical studies would yield valuable information. Undergraduate and postgraduate teaching programs should include at least the elements of educational and social psychology and cultural anthropology.

ERNEST G. ABRAHAM, M.D.

Resection of the Aortic Arch: Experimental Method and Long-Term Results. Kelly, W. D., Wohlrabe, D. E., Surgery 46:725, 1959.

This study was initiated to evaluate technical problems and observe physiologic consequences and long-term results of resection and replacement of the aortic arch.

The surgical technic employed is developed around a rapid coupling device to facilitate anastomosis of blood vessels with minimum interruption of the circulation. A detailed description of this technic is not a portion of this particular communication. The entire aortic arch, from 2 cm. distal to the coronary ostia to a point distal to the left subclavian artery, was resected and replaced with homografts. The rapid coupling device enabled the investigators to insert the aortic homograft with interruption of the circulation for approximately four minutes. Operation was performed on 26 animals. In 23, insertion of the graft was accomplished. Seventeen of the animals appeared in good condition postoperatively, as judging by general appearance and ability to stand, walk, eat and drink. Additional deaths occurring in the immediate postoperative period were those characteristically encountered with major cardiovascular procedures, including delayed hemorrhage, dehiscence of vascular anastomosis, hemorrhage through vessel walls at points of damage by clamps, etc. This resulted in 7 long-term survivors (between three and three and one-half years after the operation). Aortograms have revealed satisfactory function and anatomic preservation of these grafts. Physiologic studies were carried out to determine the effect of resection of the arch on the reflex regulation of the cardiovascular system. The methods and procedures utilized are described.

In general, the animals appear normal from a cardiovascular standpoint, except for unexplained moderately severe tachycardia.

This communication effectively demonstrates the feasibility of resection of the aortic arch in dogs with an expectation of relatively normal postoperative function in survivors.

Church E. Murdock Jr., M.D.

Bilateral Internal Mammary Arteries Ligation in Coronary Artery Disease. Battezzati, M.; Tagliaferro, A., and Cattaneo, A. D., Sc. Med. Ital. 7:463, 1959.

In Italy, Fieschi in 1942 first demonstrated the existence of anastomoses between the coronary arteries and the internal mammary arterial system. The authors confirmed his observations in 1953 by the use of a dye injection technic. In this paper they discuss the physiopathologic aspects of coronary circulation as well as the experimental and clinical results of bilateral internal mammary ligation in cases of disease of the coronary artery. Fifty dogs were used for bilateral ligation of the internal mammary artery after ligation of the anterior descending branch of the left coronary artery. They were divided into two groups. Of the first group, 80 per cent survived the ligation and 12 per cent died of ventricular fibrillation, while 76 per cent of the second group survived and 8 per cent died of ventricular fibrillation. The authors concluded that bilateral ligation of the internal mammary artery protects the myocardium from the consequences of coronary occlusion.

The authors then review the results of bilateral ligation of the internal mammary artery in 304 patients, 49.6 per cent of whom had had angina pectoris and 50.4 per cent myocardial infarction. There was improvement of varying degree in 94.7 per cent, while 4.9 per cent were not benefited. The improvement generally persisted with the passage of time, but 4.6 per cent of the patients relapsed after the initial improvement. Thirteen deaths occurred after the operation, 8 of heart disease and 5 of extracardiac causes. The alteration in the electrocardiogram after the operation showed some improvement in 195 cases (64.1 per cent) and returned to normal in 41 cases (13.1 per cent). The authors note, however, that the electrocardiographic result did not always correspond to the clinical result.

S. Attar, M.D.

Lipoma of the Colon, With Report of Seven Cases. Nelson, W. A., and Rogers, J. V., Southern M. J. 52:767, 1959.

Lipoma is the second most frequent benign tumor occurring in the colon. It is most often solitary and usually submucosal, though it may be subserosal. A few are intramuscular, pedunculated or sessile. Malignant degeneration is unknown. In about half of the cases previously reported the lipoma occurred in the cecum or the ascending colon. In this series of 7 cases the lipomas were located in the distal half of the colon.

Symptoms are present in 80 to 85 per cent of the cases. The presenting symptoms in this series were as follows:

1. Constipation.
2. Pain in the lower part of the abdomen, relieved by bowel movement or passage of flatus.
3. Alternating diarrhea and constipation.
4. Intussusception with obstruction, or ulceration and bleeding.
5. Spontaneous rectal expulsion of a tumor mass.

Roentgen studies may not be diagnostic.

although certain characteristics may be noted. The lipomas appear as rounded or ovoid radiolucent filling defects with smooth margins on barium enema or air contrast studies of the colon. The smoothness, even if complicated by lobulation, is in contrast to the verruciform or berry-like appearance of the ordinary adenomatous polyp. Intussusception in an adult should make one suspect the possibility of a lipoma of the colon.

JAMES H. ERWIN, M.D.

An Evaluation of Fascial Sling Operation for Urinary Incontinence in Female Patients. Whatton, L. R. Jr., and LeLinde, R. W., J. Urol. 82:76-79, 1959.

The authors discuss their results of the sling operation for incontinence, performed 82 times on patients followed from one to twenty years.

They state that the greatest single indication is *incontinence that has not been* cured by the vesical sphincter plication operation with the Kelly stitch or a similar repair. Women with surgical damage to the sphincter, e.g., with the resectoscope for disease of the vesical neck or repair of vesicourethrovaginal fistula, obtain good results with the sling operation. It is important to test the stress incontinence by elevating the anterior vaginal wall to determine whether surgical intervention will help the patient.

The results obtained by these authors showed that 70.7 per cent of their 82 patients were cured; 13.4 per cent were improved and 15 per cent showed no improvement. All but 19 had undergone previous operations.

SHEPARD JEROME, M.D.

Esophageal Replacement and Bypass With the Ascending and Right Half of the Transverse Colon for the Treatment of Congenital Atresia of the Esophagus. Battersby, J. S., and Moore, T. C., Surg., Gynec. and Obst. 109:207, 1959.

The authors briefly review the use of colon for esophageal replacement and bypass, and then discuss the use of the ascending and right half of the transverse colon for the treatment of congenital atresia of the esophagus. In only a few cases will esophageal substitution be necessary. Substitution is needed in most cases of atresia without fistula, *because of the high incidence of partial* or complete absence of the distal esophageal segment.

The results in 5 cases of esophageal atresia are reported. In 1 case there was associated tracheoesophageal fistula. Three of the patients recovered, and 2 died. In both cases of death the anastomosis was intrathoracic. The others were performed in the neck, the colon being brought through a substernal tunnel. Complications in the survivors were: fistula at the anastomotic site in the neck; abscess in the area of the neck and anastomosis; temporary retention of solid foods in the area of the neck, and narrowing at the site of passage of the colon through the diaphragm. Operation for stricture in the area of the cervical anastomosis has not been necessary in any case. Patients who had narrowed passages at the diaphragmatic area were operated on and, by means of stellate incisions in the diaphragm surrounding the colon, the stenosis was relieved. The authors conclude that the infant with atresia, esophageal fistula and inadequate length of the esophagus for primary end-to-end anastomosis should be managed initially by ligation of the fistula and by gastrostomy feedings. Esophageal reconstruction with the right half of the colon should be deferred, if possible, until the infant is past 9 months of age and in a good state of nutrition.

Peptic ulceration of the colon transplant was not observed in any of the recorded cases.

JAMES H. ERWIN, M.D.

Functional Results Following Subtotal and Total Colectomy with Re-Establishment of Continuity. Glaubitz, J. P., and McElwain, J. W., Surgery 46:656, 1959.

This paper is based on the authors' personal experience with 11 such procedures. They define subtotal colectomy as removal of all but a few centimeters of colon, excluding the rectum, and total colectomy as removal of the entire colon except for the rectum.

They go into an extensive review of the

literature, describing the well-known electrolyte imbalance and changes in stool habit occurring when excessive portions of the small bowel are removed. They reemphasize the fact that the distal part of the ileum and, particularly, the ileocecal valve are best preserved in order to prevent some of these undesirable complications.

The authors' indications for total colectomy include polyposis, carcinoma, diffuse diverticulitis and ulcerative colitis. Their preoperative management is more or less standard, utilizing neomycin or neomycin and sulfathaladine for preoperative intestinal preparation. Postoperative care is not unusual. The operative technic deserves comment, principally because no posterior peritonization was employed after resection; in the authors' opinion intestinal obstruction is more likely to occur from adherence of the bowel to suture material or herniation through an unsuspected defect that may be created in an effort to reperitonize extensively. No deaths occurred among their 11 patients.

The postoperative phase was characterized by frequency of defecation lasting up to fourteen days, but during the next several weeks there was improvement in every case. In the third postoperative month the evacuation habits of the patients appeared fairly well established, but some improvement could be noted up to as long as six months after the operation. Even though 2 patients were subjected to rather extensive resection of the distal portion of the ileum, there were no serious consequences attributable to the resection in any of the cases reported. All of the patients have gained weight and are completely rehabilitated. Their cases are reported in order to reemphasize the fact that total and subtotal colectomy are reasonably well tolerated and should be employed without hesitation if the indication seems clear.

CHURCH E. MURDOCK JR., M.D.

Primary and Secondary Reflux Esophagitis. Hoffmann, T., German Med. Monthly 3:5, 1958.

There are two groups of causes of reflux esophagitis, nonsurgical and surgical.

The nonsurgical causes are either of organic origin (hiatus hernia, malposition of the cardia, ectopic gastric mucosa) or functional, related partly to increased intra-abdominal pressure and partly to increased irritability of the splanchnic nerves. The first type includes the reflux observed during pregnancy and in the obese. The other occurs in patients with diseases of the upper part of the gastrointestinal tract and connected structures (peptic ulcer, gallbladder disease) associated with esophageal reflux. This type includes the reflux secondarily occurring after partial gastrectomy.

The surgical causes are esophagogastrostomy, cardioplasty, and cardiomyotomy (Heller).

According to this division, primary and secondary reflux may be distinguished. The three cardinal symptoms are burning retrosternal pain that tends to move upward; regurgitation of gastric contents without vomiting, and intermittent dysphagia. The first two symptoms are related not to food intake but to posture. The third varies in intensity, which distinguishes it from dysphagia due to neoplasm.

Four stages of reflux esophagitis are recognized: (1) acute or recurrent; (2) chronic; (3) fibrosis of the submucosa and muscle layer, with longitudinal and transverse shortening of the esophagus, and (4) fixed brachyesophagus with stenosis.

The complications of reflux esophagitis include stenosis; hemorrhages from the superficial ulcerations, resulting in anemia, and, rarely, perforation.

Surgical treatment is indicated only when intensive medical therapy fails. The surgical procedure depends on whether the cardia can be replaced where it belongs, as with hiatus hernia and cardial malpositions, or whether irreparable changes have occurred through shortening and stenosis of the esophagus. In the first instance the hernia should be reduced by the thoracic or the abdominal route. Reflux may be further prevented by suturing the fundus of the stomach to the terminal portion of the esophagus and its gastric tunnel. When irreversible changes have taken place, shortening the esophagus, hernial reposition is not possible. Although it has been criticized, the best way of reestablishing continuity seems to be by means of an isolated jejunal Roux loop. In a large number of cases, stenosis has been treated successfully by this complicated method.

For benign conditions of the lower part of the esophagus, such as cardiospasm, partial resection or cardioplasty should never be done. They tend to cause reflux, with all its complications. Having abandoned Heller's operations, the best solution appears to lie in Wangensteen's procedure—resection of the cardia and most of the stomach, with anastomosis of the esophagus to the antrum. The duodenum and pancreas may be separated from the posterior wall to facilitate the anastomosis. The operation is completed by an extramucous pylorotomy, in order to prevent the pylorospasm that follows vagotomy. In the author's hands this method was satisfactory in the prevention of reflux esophagitis.

In the presence of malignant disease the extent of the resection and restoration of continuity depend on the location of the tumor. The results indicate, however, that a high gastroesophageal anastomosis is better than a low one. To prevent reflux esophagitis after excision of the cardia for malignant disease, a valve fashioned in the wall of the stomach has been satisfactory.

ERNEST G. ABRAHAM, M.D.

Primary Repair of Benign Strictures of the Bile Duct. Cattell, R. B., and Braasch, J. W., Surg., Gynec. & Obst. 109:531, 1959.

The authors' procedure of choice for the primary repair of biliary stricture is end-to-end anastomosis of the two ends of the duct. No difficulty has been encountered in finding the lower end of the duct by recognition, in sequence, of various anatomic landmarks leading to this structure. Perhaps the most important of these is a lymph node that lies posterior and inferior to the lower segment of the duct. This node is always present in this location and may be readily demonstrated after proper elevation of the second and third portions of the duodenum and the head of the pancreas. The use of the lower end of the duct for anastomotic purposes allows the sphincter of Oddi to remain in functional continuity in the extrahepatic biliary system. The best results in a comparable series of major biliary strictures have followed the use of end-to-end repair, as reported elsewhere.

As technic has improved with experience, the authors expect satisfactory results in approximately 60 per cent of the cases after end-to-end repair, with a 2 per cent operative mortality. Close observation of the patient and prompt reoperation after possible recurrence probably could save the majority of patients who die postoperatively of complications connected with biliary cirrhosis. Furthermore, the operative mortality rate can be appreciably reduced if partial biliary obstruction is not allowed to continue for any length of time without treatment. With decrease in liver function, the patients become subject to postoperative failure of the liver, hemorrhage and the hepatorenal syndrome.

Their present technic for anastomosis, be it end-to-end or hepaticojejunostomy, involves the use of five or six chromic catgut sutures placed in an interrupted fashion through all layers of the duct or jejunum. They prefer catgut, since the use of this material is less likely to be followed by subsequent fibrosis and recurrence of the stricture. For this same reason, they use only five or six sutures placed through all layers rather than a two-layer watertight anastomosis.

In their opinion, the use of some type of prosthesis within the anastomosis is beneficial. They have never observed any evidence that would indicate that an inlying rubber tube tends to promote the recurrence of biliary stricture. In fact, in 6 cases in this series, T tubes became dislodged during the postoperative period. All 6 of the patients suffered a prompt recurrence of the bile duct stricture.

The site of emergence of the vertical limb of the T tube is important. These limbs should not be brought out at the point of anastomosis, but rather should emerge from the duct either above or below the anastomosis in the case of end-to-end repair, or above or through the jejunum in cases of hepaticojejunostomy. The authors' worst experience in this series of cases followed the use of a T tube brought out through the anastomosis. In this group of patients, a satisfactory result was obtained in only 20 per cent.

It is important to defunctionalize the limb of jejunum used in hepaticojejunostomy. The authors do not consider a Roux-Y limb necessary for this defunctionalization but prefer the use of side-to-side anastomoses involving the afferent and efferent loops of jejunum; these anastomoses are constructed approximately 6 inches (12.5 cm.) from the biliary anastomosis.

Within recent years, the number of biliary strictures that are suitable for plastic repair or dilation has decreased markedly. As has been mentioned, the authors use these types of operation only for minimal strictures. It is a great temptation to carry out dilation only for a stricture in the middle or lower part of the common bile duct and to insert a tube through the strictured area after this dilation. If the lumen through the strictured area that has been dilated was originally 2 mm. or less, in diameter, this type of procedure is not advisable; rather, they recommend that an end-to-end repair or hepaticojejunostomy be employed.

Their experience with hepaticoduodenostomy has been limited, and they feel unqualified to comment upon the results of this procedure. In recent years, they have employed this type of repair, usually for patients who have previously undergone gastric resection with defunctionalization of the duodenum.

WILLIAM E. NORTH, M.D.

Developmental Anomalies of the Aortic Arch (Anomalies de Developpement des Arcs Aortiques). Mathey, J., Binet, J. P., and Denis, B., J. de chir. 77:505, 1959.

The authors report 10 cases of anomalies of the aortic arch, the patients being 8 children and 2 adults. The embryonic basis of these anomalies is reviewed. In early development there are two ventral and two dorsal aortas joined by six pairs of arterial arches. The parts concerned with the development of the aorta are the third to the sixth branchial arches. The third arch remains as the carotid artery; the fourth arch becomes the two aortic arches, of which the right usually disappears; the fifth arch disappears; the sixth arch forms the ductus arteriosus and gives off the pulmonary artery. The subclavian arteries arise from the dorsal aortas before they fuse to become the common aorta. When only the left arch persists, the trachea and esophagus lie to the right and are not compressed by the vascular structures. If, however, both arches or other abnormal variations persist, the trachea and esophagus may be compressed.

The common anomalies are discussed. They include (1) double aortic arch; (2) right-sided aorta with left subclavian artery arising from the descending aorta; (3) left-sided arch with right retroesophageal subclavian artery; (4) right-sided aorta with a left ductus arteriosus, and (5) right-sided aorta with a left common carotid as the first branch.

The symptoms consist mainly of stridor from birth, associated with dyspnea and difficulty in taking food.

Esophagograms are diagnostic of these lesions. Tracheobronchogenic, angiocardiographic and endoscopic studies are not indicated for infants, though esophagoscopic investigation for diagnostic purposes is indicated for adults. The authors agree with Gross as to the desirability of surgical intervention as soon as the diagnosis is made. Surgical treatment consists in division of the obstructing vessel. The results are satisfactory. There were 2 deaths in the series. The respiratory symptoms disappear immediately, but the digestive troubles persist for awhile.

SAFUH M. A. ATTAR, M.D.

IMPORTANT ANNOUNCEMENT

Contributors of scientific articles for publication in The Journal of the International College of Surgeons from Europe, the Near East and the Middle East should send their articles to:

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Un comité a été nommé pour l'examen des articles à paraître. Les auteurs sont priés de joindre à leur travail de brefs résumés en français, anglais, allemand, espagnol, italien et portugais si possible.

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May 15-18

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Clinica Chirurgica

The Journal of the International College of Surgeons

Vol. 33, No. 1 SECTION II January, 1960

BULLETIN

Embodying Activities of the World Federation of General Surgeons and Surgical Specialists, Section News and Comments

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Schedule of Meetings

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1960

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May 15-18 Rome, Italy	Twelfth Biennial International Congress International College of Surgeons
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In Memoriam

ROSS T. McINTIRE

M.D., F.A.C.S. (Hon.), F.I.C.S. (Hon.),
Vice Admiral, M.C., U.S.N. Ret.
Executive Director, International College of Surgeons
1889-1959

At Rest Among the Honored Dead of the Nation he Loved and Served

After his sudden death in Chicago on Tuesday, December 8, Ross T. McIntire was laid to rest, with full military honors, in Arlington National Cemetery, on Monday, December 14, 1959.

Distinguished representatives of government, navy officers and members of the medical profession were present. Fellows of the International College of Surgeons came from many parts of the country. Honorary pallbearers included Rear Admiral B. W. Hogan, M.C., U.S.N., Surgeon General of the Navy; Vice Admiral Joel T. Boone, M.C., U.S.N., retired; Vice Admiral Murrey L. Royar, S.C., U.S.N., retired; Rear Admiral Dallas G. Sutton, M.C., U.S.N., retired; Rear Admiral John Harper, M.C., U.S.N., retired; Rear Admiral Carlton L. Andrus, M.C., U.S.N., retired; Rear Admiral John C. Adams, M.C., U.S.N., retired; Rear Admiral T. C. Anderson, M.C., U.S.N., retired; Rear Admiral Lamont Pugh, M.C., U.S.N., retired; Rear Admiral Bruce E. Bradley, M.C., U.S.N.; Captain Adrian J. Delaney, M.C., U.S.N., retired; Edward J. Cummings, M.D., and Allan J. Chenery, M.D.

The funeral service was read by Commander James E. Reaves, Ch.C., U.S.N., in the Fort Meyer Chapel. A military escort, under the command of Rear Admiral Edward C. Kenney, M.C., U.S.N., composed of naval and marine units and including a navy band, led the procession from the chapel to the graveside. The flag-draped casket was borne on a caisson. At the graveside service, the Navy gave its former Surgeon General his Vice Admiral's fifteen-gun salute, followed by the firing of three volleys and the sounding of the traditional and ultimate Taps.

When the news of Dr. McIntire's death was flashed around the earth, the spontaneous reaction of shock quickly gave way to a desire to do him honor.

National Sections of the International College of Surgeons took action, each in its own way. In some Sections, emergency meetings of the executive committees were called and appropriate resolutions of homage and sympathy were passed. In Brazil, a three-day period of mourning was kept. Everywhere, announcements and tributes were sent to the surgical and the lay press. In Rome, plans are being made for a memorial session to be held at the Twelfth Biennial International Congress in May.

Thus, everywhere, the International College of Surgeons pays tribute to its distinguished and beloved Executive Director.

ROSS T. McINTIRE
M.D., F.A.C.S. (Hon.), F.I.C.S. (Hon.)
Executive Director, International College of Surgeons
1889-1959

MEMORIAL

WHEREAS, one of the luminaries of the surgical world has gone to his reward and the International College of Surgeons has sustained a grievous and irreparable loss in the sudden passing of its great Executive Director

Dr. Ross T. McIntire

who has served this College with distinction and honor since 1955; and

WHEREAS, the departed has made a lasting and substantial contribution to his country, his chosen profession, this College, and to all mankind, having served in the United States Navy Medical Corps since 1917 and having been elevated to the rank of Vice Admiral and served as Surgeon General of the Navy and Chief of its Bureau of Medicine and Surgery, and having served long and faithfully and with distinction as personal White House Physician to a President of the United States; and

WHEREAS, the deceased devoted his life to public service and to help advance the program for rehabilitation of the disabled and the employment of the physically handicapped, having served as the first Chairman of the President's Committee for Employment of the Physically Handicapped and having given of himself with all of his power to advance the science of surgery and the ethical practice of its art; and

WHEREAS, DR. ROSS T. McINTIRE served the International College of Surgeons for five years last past with distinction in furthering, implementing and directing the work and carrying forward the purposes and aims of this College, to which he was dedicated,

Now, therefore, BE IT RESOLVED that this Memorial be recorded in the Annals of the International College of Surgeons, expressing the deep sorrow and sense of irreparable loss in the sudden passing of its beloved and distinguished leader, friend and co-worker, ROSS T. McINTIRE; that we do herewith express our sympathy and sorrow to his widow, Pauline McIntire, and that we do commend our beloved member to his Maker.

Resolution passed jointly by the International Executive Council of the International College of Surgeons and the Executive Council of the United States Section at their Meetings held on Saturday, December 12, 1959, in Chicago, Illinois.

The last photograph of Dr. McIntire, taken at lunch with Dr. Lyon H. Appleby of Vancouver, B.C., and Dr. Max Thorek, on December 3, 1959

Ross T. McIntire

M.D., F.A.C.S. (Hon.), F.I.C.S. (Hon.),
Vice Admiral, M.C., U.S.N. Ret.
Executive Director, International College of Surgeons
1889-1959

Many high titles resound in the mind's ear when the name of Ross T. McIntire is uttered. During his lifetime he held high office, fulfilled grave responsibilities with courage and devotion and far-sightedly assumed leadership of broad humanitarian programs. A grateful nation held him in affection. Countries whose governments and whose people he had been instrumental in benefitting were appreciative, and, together with organizations both in the United States and abroad, delighted to do him honor.

But to me he was my friend.

It was a privilege for which I shall always remain thankful, for among Ross T. McIntire's friends were presidents and kings, prime ministers, commanders of armies and of navies, men who in our generation made world history. He was a surgeon, an officer in the Navy, an apolitical person. His only purpose was to serve his country and the cause it espoused. This he did with wholehearted thoroughness, and among the rewards that accrued to him were the confidence and the friendship of the leading figures of our time.

White House Physician

The crowning association of Ross T. McIntire's life was his friendship with Franklin Delano Roosevelt, whose personal physician he was from the day of Roosevelt's first inauguration to the moment of his death. He saw him each morning, and late each afternoon dropped in at the Executive Office to insure cessation of work at a more or less reasonable hour. He supervised the President's period of relaxation and exercise. He instituted a system of regular and complete physical examinations by noted specialists. Their findings presented a comprehensive picture of the President's condition and offered a guide to Dr. McIntire and the President's other medical advisers. During the critical years of the war, Dr. McIntire had to use his influence, no less as a

Dr. McIntire and Dr. Thorek arriving at Geneva, Switzerland, in May of 1955 for the Twentieth Anniverary Congress of the College

friend than as a physician, to persuade the President to set some limit to his work and conserve his health, particularly that of his heart. He was the President's almost constant companion, accompanying him on numerous inspection tours with the fleet at sea or to overseas bases and on historic official journeys.

For Dr. McIntire, too, the duties of these years were heavy. He was Chief of the Bureau of Medicine and Surgery and Surgeon General of the Navy.

While his war responsibility was tremendous, war itself was no new experience to Ross T. McIntire. In April 1917, two days before the declaration of war with Germany, he had been commissioned a lieutenant (j.g.) in the Medical Corps of the Navy, thus inaugurating his distinguished career in naval surgery.

Early Experiences

Ross T. McIntire was a native of Salem, Oregon. Receiving his medical degree from Willamette University Medical School (now the University of Oregon) in 1912, he began to practice medicine in his home state, with special interest in ophthalmology and otolaryngology.

During World War I he was attached to the surgical staff of the Navy as assistant surgeon. He took a postgraduate course in naval medicine at the Naval Medical School in Washington and served for three years on the U. S. S. *New Orleans* on the Asiatic Station. In 1920 he was stationed at the U. S. Naval Hospital in Canacao, in the Philippines.

After a course of postgraduate study at Washington University in St. Louis, Missouri, for two years he was head of the Eye, Ear, Nose and Throat Department of the Naval Hospital in San Diego. He served as chief of the same department on the hospital ship U. S. S. *Relief* twice prior to 1931, and, after further postgraduate work, was appointed instructor in ophthalmology and otolaryngology at the Naval Medical School in Washington.

In March 1933, with his rank raised to a captaincy, he was assigned to additional duty as White House physician. Five years later he was elevated to the rank of rear admiral, designated chief of the Naval Bureau of Medicine and Surgery and named Surgeon General of the Navy.

High Honors

At the end of the war, the citation which accompanied the Distinguished Service Medal awarded to him read:

"For exceptionally meritorious service to the Government of the United States in a duty of great responsibility as Chief of the Bureau of Medicine and Surgery and Surgeon General of the Navy from December 7, 1941, to August 31, 1945. Displaying extraordinary foresight, unerring judgment and great administrative ability, Admiral McIntire directed the planning and the practical application of the vast program which provided medical care and supply for the Navy and the Marine Corps on a scale and with a degree of success unprecedented in naval warfare. His outstanding achievement had a direct and vital part in the successful prosecution of the war."

His duties during the war included supervision and direction of the rapid and vast increase in medical personnel, the building of many new naval hospitals, the expansion of several facilities both in this country and overseas and the maintenance of considerable research which gave American sailors and marines the best possible medical attention and battlefield care.

When Dr. McIntire relinquished his active naval duties, he accepted the post of director of the American Red Cross National Blood Program. Two years later he assumed the chairmanship of the newly organized President's Committee on Employment of the Physically Handicapped.

It was in 1955 that Dr. McIntire became Executive Director of the International College of Surgeons, a post for which he was eminently qualified by experience, temperament and purpose in life.

The College

He had a world-wide vision. He had a dream of a world in which every man and woman, every aged person and every newborn child would be as well as science, surgery, and education could make him. He wished that every man would be able to earn, to the limits of his potential ability, the bread he ate, and be a self-respecting useful citizen of his community.

To Ross T. McIntire, the International College of Surgeons was the great instrument through which surgical science and surgical skill could be disseminated throughout the world and his hope of serving the sick, the maimed and the handicapped be achieved.

Dr. McIntire addressing the Twenty-First Annual Convocation of the United States and Canadian Sections of the College in Chicago on September 13, 1956

He devoted himself wholeheartedly to supporting its purposes.

For the Twelfth Biennial International Congress of the International College of Surgeons to be held May 15-18, 1960, in Rome, Italy, he organized a Symposium on Rehabilitation that promises to be a milestone in the whole rehabilitation program of the world. The occasion, which would have been a source of great satisfaction to him, will now serve as his memorial.

Then, and at countless other times, we shall be thinking of him, grateful for the years he gave of able and devoted service to the College and of warm friendship to all of us.

Max Thorek

In Tribute to Ross T. McIntire

From among the hundreds of messages which have reached me I cull these excerpts to serve as a composite expression of the high regard in which Dr. Ross T. McIntire was held by all who knew him. They are a tribute to him as a man, a surgeon and a patriot.

M.T.

NEW YORK CITY

I was saddened by the death of Dr. Ross T. McIntire. He was a devoted friend and a kind doctor to my husband, and he commanded the respect and admiration of all of us.

I shall miss Dr. McIntire and I join his wife in her grief over his sudden death.

Eleanor Roosevelt

WASHINGTON, D.C.

I am deeply saddened to hear of the death of Dr. Ross McIntire. Indeed, he was a distinguished and beloved figure not only to men in American medicine, but also to a wide host of friends in public life.

As the Executive Director of the International College of Surgeons, he accomplished much to advance the standing and prestige of the great profession of surgery.

Dr. McIntire was a great American and he will be sorely missed.

Hubert H. Humphrey
U.S. Senator from Minnesota

MONTGOMERY, ALABAMA

Admiral Ross T. McIntire was my good friend and his death is a personal loss to me. But more than this, Admiral McIntire's death is a loss to our entire nation, for he was a dedicated public servant through many years of war and peace and he was ever the champion of medical care and better health for all our people.

As Executive Director of the International College of Surgeons, Admiral McIntire helped to press the battle for better health far beyond the borders of our nation and into many countries of the world.

His dedicated life and distinguished service to humanity will stand as a challenge and an inspiration to men of science and to men of good will everywhere.

Lister Hill
U.S. Senator from Alabama

WASHINGTON, D.C.

The death of Vice Admiral Ross T. McIntire represents a tremendous loss, not only to the Navy but also to the entire medical profession, as well as to the total population of this country. Admiral McIntire was an outstanding physician and a most capable naval officer. He was extremely well qualified and an authority in his chosen field of medical specialty, ophthalmology and otolaryngology.

Following his appointment as Surgeon General of the Navy, on 1 December 1938, Admiral McIntire directed the planning for the expansion of the Navy Medical Department in the mounting national emergency. This included the great and rapid increase of all naval medical personnel, the construction of new naval hospitals, and the care of the sick and wounded in all combat areas throughout the world. Under his most capable guidance, the Navy Medical Department was able efficiently to expand from a relatively small peace-time organization to an unprecedented strength in a comparatively short period of time during mobilization for war without significant disruptions of its normal functions. Admiral McIntire served for eight years as Surgeon General and Chief of the Bureau of Medicine and Surgery, and during that period proved to be an astute administrator and a most able navigator of the Medical Department of the Navy throughout an epochal period fraught with many formidable responsibilities.

With the passing of Admiral McIntire, we have lost one of the truly outstanding leaders of the medical profession and of the United States Navy. His death has been a great personal loss to me.

B. W. Hogan
Rear Admiral, M.C., U.S.N.,
Surgeon General, U. S. Navy

In Tribute to Ross T. McIntire

WASHINGTON, D.C.

Ross McIntire was the bone and sinew of the President's Committee from its beginning. In his quiet but forceful way, he engineered the foundations of the program that today has captured the imagination of millions. He was not only a great Navy Surgeon General and a great leader of the American Red Cross Blood Program, but he was a great American and an inspiration to all privileged to work with him.

Melvin J. Maas
Major General, USMCR, Ret.
Chairman, President's Committee on Employment of the Physically Handicapped

WASHINGTON, D.C.

Admiral McIntire gave the President's Committee on Employment of the Handicapped a very high degree of leadership. He helped the handicapped to be understood.

Graves B. Erskine
General, USMC, Ret.
Assistant Secretary of Defense for Special Operations

WASHINGTON, D.C.

During one early period when Dr. McIntire was Chairman of the President's Committee, it was my privilege to work very closely with him after he had named me Vice-Chairman of the Executive Committee.

I came to know and appreciate his deep interest and feeling for the problems of the handicapped and to realize how much of his time, talents and energy he put into the program.

Robert Ramspeck
Vice-President
Eastern Airlines

WASHINGTON, D.C.

Vice Admiral Ross T. McIntire had been a friend of mine for many years before I was called to active duty in the United States Navy and went to Washington to serve under him at the Naval Medical Center and the Bureau of Medicine and Surgery.

During that time I learned to appreciate his devotion to duty, his loyalty to the Service and to his friends, and his untiring enthusiasm. I consider it a real privilege to have worked so closely with him. I valued his friendship.

After his retirement from the United States Navy, Dr. McIntire devoted his enthusiasm and energy to the International College of Surgeons and contributed greatly to the program of that organization.

Certainly he will be missed by all his friends and admirers who were the recipients of his friendship and devotion.

Winchell M. Craig, M.D.
Special Assistant to the Secretary for Health and Medical Affairs

Dr. McIntire (third from the left) with naval medical men at the Twenty-Fourth Annual Congress of the North American Federation of the College, September 1959, in Chicago: Capt. Charles F. Gell, M.C., U.S.N., Special Assistant for Medical Services, Office of Naval Research, Washington; Capt. David Minard, M.C., U.S.N., Naval Medical Research Institute, National Naval Medical Center, Bethesda, Maryland; Prof. Dr. Dietrich E. Beischer, Head, Biophysical Laboratory, School of Aviation Medicine, Pensacola, Florida; Rear Adm. Bartholomew W. Hogan, M.C., U.S.N., Surgeon General, U.S. Navy, Washington; Capt. Clifford P. Phoebus, M.C., U.S.N., Director, Astronautical Division, Bureau of Medicine and Surgery, Washington, and Lt. Comdr. John H. Ebersole, M.C., U.S.N., Medical Officer, U.S.S. Seawolf [SS(N)575], New London, Connecticut

In Tribute to Ross T. McIntire

ATLANTIC CITY, NEW JERSEY

It was indeed with sincere and deep personal regret that I learned of the passing of our esteemed Executive Secretary, Doctor Ross McIntire.

His passing leaves a void in American Medicine that will be most difficult to fill.

I have known Dr. McIntire for many years. He was a most efficient military man, an eminent statesman, an excellent physician, a true American and, above all, a perfect example of a gentleman in every sense of the word.

I know his loss will be sorely felt, not only by you personally, but by the entire membership of the International College of Surgeons as well as by all citizens of this country.

I extend to you and, through you, to his family my deepest sympathy in this tragic loss.

David B. Allman, M.D.
Past President
American Medical Association

CHICAGO, ILLINOIS

Admiral Ross T. McIntire, one of the most genial, friendly leaders and executives I have ever known, will be a great loss to every activity with which he was associated. His remarkable career as Surgeon General of the Navy, as White House physician, as director of the Red Cross Blood Bank activities, as worker in the field of rehabilitation culminating in the magnificent work he did for the International College of Surgeons is a fine example of the work of the physician as an executive, an administrator, and as a leader. His ideals were of the highest.

Morris Fishbein, M.D.
Consultant to Secretariat
International College of Surgeons

CHICAGO, ILLINOIS

The International College of Surgeons suffered a tremendous loss in the death of its Executive Director, Admiral Ross T. McIntire.

Ross McIntire came to the College after the completion of years of public service as a medical officer of the Navy, retiring as a Vice Admiral. His last tour of duty in the Navy was that of Surgeon General. He brought with him to the College certain personal attributes that endeared him to his colleagues. He was soft spoken, yet firm; slow to anger, but did not side-step an issue, and was tireless in his pursuit of what he thought would benefit medicine and the public health.

His ability as an administrator was one of his outstanding characteristics. He could delegate authority and assign duties, but would always be willing to assist and to give advice, never losing sight of the basic issue.

One of his many interests was in the rehabilitation of the handicapped. He recognized the great economic loss to the country through the lack of proper programs for training these individuals for productive employment, as well as for psychological reasons.

Admiral McIntire's duties with the College took him all over the world, and he made many friends abroad through his graciousness and pleasing personality. They, as well as we, mourn his loss.

George F. Lull, M.D.
Consultant to Secretariat
International College of Surgeons

SAO PAULO, BRAZIL

I have just received your telegram telling me of the unexpected death of Admiral Ross T. McIntire. I was very shocked.

I will always remember our good friend, who was so very devoted to the College and to our ideals.

Please accept my sympathy and extend it to all concerned.

Carlos Gama, M.D.
Past President
International College of Surgeons

From the President of the International College of Surgeons

ROCHESTER, MINNESOTA

Dr. Ross T. McIntire, Executive Director of the International College of Surgeons, was an inspired worker for the ideals and growth of the College. He realized the need of an international organization of the surgical profession in order that civilization might benefit from the rapidly increasing discoveries in our profession.

With his vast experience and worldwide contacts, he was well qualified to become Executive Director of the College and soon was

In Tribute to Ross T. McIntire

loved and idolized by all those who came to know him. His unexpected passing came as a shock to his many friends, and we, members of the International College of Surgeons throughout the world, pay tribute to our beloved and respected leader, who served his country and mankind to the best of his ability.

Henry W. Meyerding, M.D.
President
International College of Surgeons

ROME ITALY

PROFONDAMENTE RATTRISTATO NOTIZIA MORTE PREMATURA DOCTOR MCINTIRE DEVOTO ENTUSIASTA PREZIOSO COLLABORATORE INTERNATIONAL COLLEGE STOP QUALE PRESIDENTE ELECT ET MEMBRO ANTICA DATA INTERNATIONAL COLLEGE MI INCHINO COMMOSSO ALLA SUA MEMORIA ET ESPRIMO VIVE CONDOGLIANZE SUA FAMIGLIA STOP PROPONGO SOLENNE COMMEMORAZIONE SEDUTA INAUGURALE CONGRESSO INTERNATIONALE ROMA STOP COLLEGHI ITALIANI UNISCONO LORO PROFONDO COMPIANTO

MARIO DOGLIOTTI PRESIDENTE-ELECT
INTERNATIONAL COLLEGE OF SURGEONS

VANCOUVER, BRITISH COLUMBIA

In the contemplation of the loss of Doctor McIntire from many examples I select the humanism of John Donne of several hundred years ago:

"No man is an island, entire of itself. Everyman is a piece of the continent. If a clod be washed away by the sea, England is the less . . . (so) any man's death diminishes me because I am involved in mankind. And therefore never send to know for whom the bell tolls. It tolls for thee."

It does indeed—Doctor McIntire was a part of us.

Lyon H. Appleby, M.D.
First Vice-President
International College of Surgeons

From the President of the United States Section

CHICAGO, ILLINOIS

Only a few hours after our return home from the marvelous clinical tour around the world sponsored by the United States Section of the International College of Surgeons, my heart was made exceedingly sad by the almost unbelievable news of the sudden death of Vice-Admiral Ross T. McIntire.

During the years that Dr. McIntire served as Executive Director of the International College of Surgeons, I came to know him well, and to know him was to love him. With few exceptions, he and I were in complete agreement about all matters concerning the United States Section and the international phases of the College. We had many conferences, either in his office at the College, at the dinner table in a restaurant, or over the telephone. He and I traveled together to New York on at least four occasions; to Reno, Nevada; to Los Angeles; to Birmingham, Alabama; to Atlanta, Georgia, and to many other cities. He was a most agreeable and pleasant traveling companion, and on these occasions I enjoyed the opportunity of visiting with him with greater leisure than was possible under the pressures of Chicago.

Dr. McIntire was a man of great personal dignity, unimpeachable integrity, commendable modesty, and a humanitarian at all times. Although he was slow to anger, he was ever ready to rise to defend the truth as he saw it. He had deep devotion to the International College of Surgeons, and missed no opportunity to proclaim its goals and ideals. All of these characteristics were seasoned with a quiet but delightful sense of humor.

The International College of Surgeons has lost one of its most able and devoted workers; the citizens of the world have lost a friend whose last great effort was toward the organization of a program on rehabilitation for the Surgical Congress which is scheduled for Rome, Italy, May 14-16, 1960. It shall be my responsibility, with the help of all others whose interest can be enlisted, to try to complete the rounding out of this program on rehabilitation and to make it one of the highlights of this important Surgical Congress in the Eternal City.

Edward L. Compere, M.D.
President
United States Section

In Tribute to Ross T. McIntire

PHILADELPHIA, PENNSYLVANIA

Life is so admixed with unrealities, vicissitudes and complex psychological processes that cynicism becomes paramount and is the *bete noir* of our existence. Yet, if we possess vision and the ability to span the continuity of the past with penetration of the substrata, we find ourselves overwhelmed and overjoyed with the simplicity and tranquility of mankind. Due to a highly differentiated and sensitized nervous system, we are possessed of an intrinsic impressionistic mechanism which does much to carve and mould our careers for one of useful service—based on truth, honor and loyalty. The life of Ross T. McIntire was one of service to his country, to the International College of Surgeons, to the American Red Cross, and to a program for the rehabilitation of mankind throughout the world.

Ross McIntire was a gentleman possessed of an unusual degree of refinement. His prodigious strength of character, his sound judgment, his intellectual capacity, as well as his extraordinary ability and leadership, served as a constant source of inspiration. He was an assiduous worker and a devoted member of the College and his appointment to its echelon was a high point in the twenty-five-year history of our organization. His warmth of friendship and sincerity of purpose are treasures to be held dear and I, as a myriad of others, have lost a true and loyal colleague.

Harry E. Bacon, M.D.
President-Elect
International College of Surgeons

CHICAGO, ILLINOIS

Ross T. McIntire had the unique ability of leading and yet being close to those who were being led. He was kind and yet, when the occasion called for it, he could be firm. He was proud and yet was modest, and, for a man of his station, practiced humility and lived the part.

He expected little of life and offered much. His integrity was exceptional. While the years allotted to him were few, he accomplished much and has left an imperishable heritage on earth. His friends have lost much and I, for one, will miss him greatly.

Francis L. Lederer, M.D.
Treasurer
International College of Surgeons

From the National Sections of the International College of Surgeons

BUENOS AIRES, ARGENTINA

The sad news has come as a shock to the Argentine surgeons. Those of the Argentine Section who during long years have followed the untiring and generous activity of Ross McIntire feel the despair of losing a man whose labors set a high example to others.

Possessed of exceptional clearness of mind and tremendous drive, among other personal assets, Ross McIntire traveled to the farthest regions of the globe carrying out with fidelity a true apostolate of the ideals of the International College of Surgeons, which are Science, Humanity and Goodwill.

A true interpreter of constructive ideas, he always proved to be a very successful coordinator between the many Sections of our College.

The world renders its deepest gratitude for his personal contribution to the preservation of the health of Franklin Delano Roosevelt, the guardian of the health and freedom of millions.

From now on the surgeons of the world and those of Latin America in particular will miss his fatherly loving-kindness and creative power that he conferred to the College while fulfilling its ideals.

Both the closest cooperation and solidarity among the Fellows of the College must be the answer to counteract this setback of destiny.

Jorge A. Taiana, M.D.
President, Argentine Section

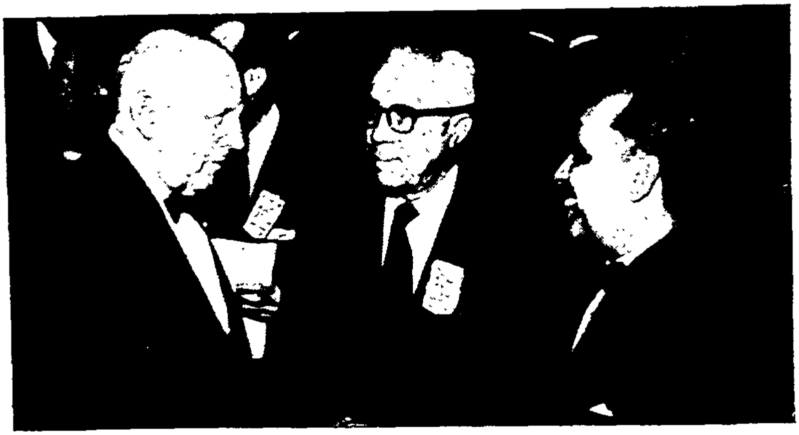
VIENNA, AUSTRIA

Ich bestatige dankend den Erhalt des Telegrammes vom 10.XII.d.J. anlasslich des Todes von Dr. Ross T. McIntire, Executiv Director des International College of Surgeons

In den letzten Jahren widmete er sich ausschliesslich dem International College of Surgeons und erwarb sich als Executiv Director grosse Verdienste um die Organisation von Kongressen insbesondere um das Zustandekommen von Studienreisen.

Im vergangenen Sommer fuhrte McIntire eine derartige Studienreise fur Mitglieder des International College of Surgeons nach Russland und nach einigen Stadten Europas, da-

In Tribute to Ross T. McIntire



Dr. McIntire at the Fourth National Congress of the Brazilian Section of the College, October 1957, in Salvador, Bahia, with Marshal Dr. Emmanuel Marques Porto and His Excellency, Governor Dr. Antonio Balbino de Carvalho

runter nach Wien. Wir haben von diesem Aufenthalte Herrn McIntire al äusserst konzilianten, vielseitigen, zielstrebigen Chirurgen heiteren Gemütes in frischer und bester Erinnerung.

Sein Ziel war die Verständigung und die fruchtbare Freundschaft zwischen allen Chirurgen der ganzen Welt. Dieser Idee hing er mit allen Fasern seines Herzens an. Wie kein zweiter setzte er seine ganze, wie es schien, noch völlig ungebrochene Arbeitskraft dafür ein.

Sein unerwarteter Tod bedeutet für das International College of Surgeons einen unersetzlichen Verlust.

L. Schönbauer, M.D.
President, Austrian Section

LIÈGE, BELGIUM

Nous avons appris avec une profonde tristesse le décès inopiné du Directeur Général du Collège International le Dr. Ross McIntire.

La Section Belge me charge de vous adresser, ainsi qu'à tous vos collègues américains l'expression de nos condoléances les plus vives.

Soyez convaincu que nous sommes de coeur avec vous tous pour apporter à cet éminent Collègue si tôt disparu l'hommage de notre profonde sympathie.

Léopold Lambert, M.D.
President, Belgian Section

SAO PAULO, BRAZIL

Not only have the College and medical science lost one of their best friends, devoted co-workers and loyal supporters, but humanity has equally been deprived of an idealist and a great man, who brought to the College all his energy, ability and devotion.

His name will forever be enshrined in our hearts, and his death is mourned by all who knew him. His place in their hearts will never be filled. We will remember him for years to come.

His colleagues of the Brazilian Section of the International College of Surgeons will greatly miss his help and his counsel, and mourn long the death of a good friend, a distinguished surgeon and a great man.

The Directorship of the Brazilian Section of the International College of Surgeons join his family and friends in their sorrow, and regret the loss of this outstanding colleague.

Matheus Santamaria, M.D.
President, Brazilian Section

MONTREAL, P.Q., CANADA

The death of Admiral Ross McIntire has created a loss of great magnitude. This will be felt in all parts of the world wherever he had made an appearance. His presence was always one of great effect; a kindly voice, a co-operative individual, a man of integrity and very much aware of the needs of his colleagues in every country. His devoted activities on behalf of the College were very productive, and he never spared himself whenever he felt that an effort on his part would be of benefit to someone else.

We in Canada have always found Admiral McIntire to be honest, fair and faithful to the cause. We mourn his loss and pray that his memory will be an example and a guide to others.

George J. Strean, M.D.
President, Canadian Section

HONG KONG

WE ARE DEEPLY SHOCKED BY DEATH OF ADMIRAL ROSS MCINTIRE GREAT LOSS TO SURGICAL WORLD PLEASE EXTEND OUR SINCEREST CONDOLENCE TO HIS FAMILY

CHINA HONG KONG SECTION

HONG KONG

The China Hong Kong Section of the International College of Surgeons held its annual general meeting last night and learned of Admiral Ross T. McIntire's sudden death. We are all deeply grieved at his passing.

We have always observed with keen appreciation and great admiration his distinguished work as a surgeon and his active service in the administration of the International College of Surgeons. We feel a very deep sense of loss. He will not easily be replaced.

His many personal friends in Hong Kong, including Drs. Arthur Woo, John Gray, Kenneth Hui, and all our members, join me in expressing deepest sorrow and wish you to convey our respectful condolences to his family.

Roy Mar, M.D.
China Hong Kong Section

GUAYAQUIL, ECUADOR

Please accept sincere condolences upon the irreparable loss of Dr. Ross T. McIntire both in my name and in that of the Ecuadorian Section of the International College of Surgeons.

The memory of Dr. McIntire's accomplishments in behalf of the College, his encouragement of efforts to better the surgical profession, his endeavor to help every one of us in the College makes it very difficult indeed to assuage the grief over this bereavement.

José Ramírez D., M.D.
Vice-Pres., Ecuadorian Section

GUAYAQUIL, ECUADOR

Permit me to express my sentiment of sympathy at the death of Ross T. McIntire, the invaluable Executive Director of the International College of Surgeons and my personal friend.

I should like also to extend my condolences to Dr. McIntire's family.

Francisco Rizzo Velasco, M.D.
Dean, Faculty of Medicine
University of Guayaquil

HELSINKI, FINLAND

The Finnish Section of the International College of Surgeons wishes to express its profound regret upon the decease of the College's Executive Director, Admiral Ross T. McIntire. During Admiral McIntire's visit in Finland last August we became acquainted with him and learned to appreciate him highly. We feel sincere grief at his death.

Juuso Kivimäki, M.D.
President, Finnish Section
Harry E. Blomquist, M.D.
Secretary, Finnish Section

HELSINKI, FINLAND

Death has taken one of the best: Dr. Ross T. McIntire, F.I.C.S. (Hon.), Executive Director of the International College of Surgeons. Sorrow is felt in all countries of the world, not least in Finland.

Sitting quietly in my library I am looking at the smiling photograph of my dear friend. On the table is his last letter to me, dated just three days before the fatal heart attack. I hardly can read these lines: ". . . As we go along, I will continue to give you information as to the Rome program . . . wish for you and your family Happy Holiday Season . . ."

I am convinced that all of the National Sections of the College have the same feeling as does Finland. The letters we received, we felt, were signed not only by the dynamic Executive Director but also by a good colleague and a fine friend.

I am happy to recall memories of meeting Dr. McIntire in Chicago and in Geneva. Last summer, while visiting Helsinki with a group of American colleagues, he was warmly greeted by Fellows of the Finnish Section. With his close friend, Dr. Curtice Rosser, he spent a Sunday afternoon at my country home, and

In Tribute to Ross T. McIntire

enjoyed the heat of the Finnish Sauna. His host and hostess could not foresee that the days of their distinguished guest were already numbered.

The smiling picture of Ross T. McIntire will always be radiating the high spirit of international understanding.

K. E. Kallio, M.D.

LYON, FRANCE

C'est avec une profonde émotion et une douloureuse surprise que les membres de la Section Française du Collège International des Chirurgiens ont appris, par un télégramme de Monsieur le Professeur Thorek, la mort brutale de Monsieur le Docteur Ross T. McIntire, "Executive Director" de l'International Collège.

Nombre d'entre nous avaient eu l'occasion de la rencontrer,—certains aux Etats Unis, d'autres en Europe,—notamment lorsqu'au cours de l'année dernière il vint à Paris avec un groupe de ses Collègues américains qui faisaient avec lui un tour d'Europe—Tous ont conservé un souvenir agréable de cet homme au visage ouvert, accueillant, à l'abord aimable, dont tout l'aspect physique appelait la sympathie et traduisait le dynamisme.—Et ceux qui ont eu la chance de le connaître mieux savaient qu'il ne s'agissait pas d'une simple apparence, mais que cet animateur de nos réunions avait su, par ses qualités d'organisateur et d'homme, méritait l'estime profonde de ses pairs.

Nos Collègues des Etats Unis ont, mieux que nous, vocation pour rappeler la carrière glorieuse de Ross T. McIntire dans le service de Santé de la Marine, et son action comme "Executive Director" du Collège International. —Il avait été en outre, nous a-t-il été dit, le médecin particulier du Président F. Roosevelt.—

Sa brusque disparition laissera des regrets bien au delà des frontières de son pays.— Ses Collègues Français du Collège tiennent à exprimer aux Amis de Ross T. McIntire leurs plus vives condoléances et leurs plus vifs sentiments de sympathie.

Jean Creyssel, M.D.
President, French Section

PARIS FRANCE
TRES PEINES VIVES CONDOLEANCES
PIERRE DENISE FRANCINE VIALA

BORDEAUX FRANCE
DEEPLY AFFECTED BY THE DEATH OF OUR EMINENT DIRECTOR OFFER OUR SINCERE CONDOLENCES
FRENCH SECTION

BORDEAUX, FRANCE

I am extremely grieved by the sad news of the death of the highly esteemed Executive Director of the International College of Surgeons, whom I had the honor of considering one of my good friends. He was cordial and helpful, and his loss is felt very deeply.

Raymond Darget, M.D.
Secretary, French Section

PARIS, FRANCE

It was with great sorrow that I heard the sad news of the death of Admiral McIntire. Please accept my sincere condolences for yourself and for the College, which has suffered a great loss.

I saw Dr. McIntire a few short months ago in Orly coming down briskly from the Munich plane. We had some pleasant hours together. No one could possibly have foreseen so grievous an event.

Just today I had occasion to discuss the coming of Fellows of the College to Paris in May, and it is sad to know we shall not see Admiral McIntire leading the friendly group.

Please extend my sympathy to all concerned with our deeply lamented friend.

Marcel Thalheimer, M.D.

KIEL GERMANY
SIND TIEF ERSCHUETTERT UEBER HINSCHEIDEN MCINTIRE VERLUST TRIFFT UNS SCHWER HERZLICHE TEILNAHME DER FAMILIE BESONDERS UNSEREM GRUENDER
DEUTSCHE SEKTION

GERMANY

Die Deutsche Sektion steht trauernd an der Bahre dieses aufrichtigen, klaren und tatkräftigen Mannes. Seine Persönlichkeit und die Bedeutung seines Wirkens für das College wird von Berufeneren gewürdigt. Die Deutsche Sektion möchte aber an dieser Stelle sagen, was er gerade ihr gewesen ist. Er gehörte zu denen seines Landes, welche mit warmem Herzen und tiefer Einsicht die Schwierigkeiten sahen und begriffen, welche aus der Situation einer politisch und geistig geteilten Nation sich für unsere Sektion ergaben. Daraus erwuchs sein ganz besonderes Verständnis und

seine tätige Anteilnahme am Aufbau und an der Entwicklung der Deutschen Sektion. Nie wandten wir uns vergeblich mit unseren Problemen um Rat an ihn. Noch im August ds. Jahres hatten wir die Freude, Mr. Ross McIntire in München auf deutschem Boden zu begrüssen. Seine Frische und sein Humor, mit dem er von seiner Ost-Reise berichtete und sein kluges Urteil über die Länder und Völker, die er besucht hatte, ist uns bleibend gegenwärtig. Beeindruckend auch die Einsichten seiner Reisen über die Gesamtsituation des College und die für die einzelnen Sektionen unterschiedlichen Möglichkeiten und Aufgaben.

In Trauer und Dankbarkeit gedenken wir seiner.

Deutsche Sektion

KIEL GERMANY
ICH KANN NUR SAGEN DASS ICH AUF DAS TIEFSTE UBER DEN VERLUST DIESES WERTVOLLEN MANNES ERSCHUTTERT BIN
A W FISCHER MD PRAESIDENT DEUTSCHE SEKTION

WUPPERTAL-BARMEN, GERMANY

Ihre Nachricht über den Tod von Herrn McIntire hat uns mit tifer Trauer erfüllt. Welchen Verlust er für Sie und für Ihr College bedeutet, können wir nur ahnen. War er doch seit Jahren einer Ihrer engsten Freunde und Mitarbeiter, ein Mann, der nur noch dem College lebte, damit auch einer, durch den erst das College lebt. Denn eine Idee nicht materialistischer Natur lebt und wirkt nur unter dem Einsatz von Idealisten. Für Europa war der Inbegriff hierfür Felix Mandl. Er war hier die Triebfeder für die College-Idee, deren Verlust wir auch heute noch manchmal trauernd empfinden. McIntire stand für das ganze College neben Ihnen, Sie unterstützend und ergänzend. Es ist schwer, einem solchen Mann ins Grab zu sehen, schwer auch, ihn zu ersetzen.

Kurt Boshamer, M.D.
Secretary, German Section

BOMBAY, INDIA

The Indian Section of the International College of Surgeons mourns the passing of Admiral McIntire, indefatigable worker in the cause of the International College of Surgeons. The Indian Section loses a great friend and our hearts go out in sympathy to his family and to the College.

A. E. DeSa, M.D.
Honorable Secretary
Indian Section

TEHERAN IRAN
THE IRANIAN SECTION OF THE INTERNATIONAL COLLEGE OF SURGEONS WISHES TO EXPRESS ITS DEEP SORROW AT THE DEMISE OF DOCTOR ROSS T MCINTIRE THE BENEFIT OF HIS WORK WILL REMAIN WITH US ALWAYS JUST AS HIS SPIRIT WILL FOREVER BE A PART OF THE INTERNATIONAL COLLEGE OF SURGEONS RESPECTFULLY E HAZRATI SECRETARY IRANIAN SECTION

ROME ITALY
THE ITALIAN SECTION OF THE INTERNATIONAL COLLEGE OF SURGEONS LEARNED WITH DEEP SORROW OF THE SUDDEN DEATH OF DR MCINTIRE HE UTTERLY DEDICATED HIMSELF TO THE INTERNATIONAL COLLEGE OF SURGEONS AS EXECUTIVE DIRECTOR AND HIS LOSS IS VERY REGRETTABLE WE SHOULD LIKE TO EXPRESS OUR PROFOUND GRIEF
PIETRO VALDONI MD PRESIDENT AND GIUSSEPPEE BENDANDI MD SECRETARY ITALIAN SECTION

TOKYO, JAPAN

Your telegram has been received this morning and I have learned with the profoundest grief that Admiral McIntire, the Executive Director of the International College of Surgeons, has succumbed to heart disease.

No words can express the deep sorrow I felt when I heard of his death. I was greatly shocked, as I never dreamed of such a loss. We all know that he was a most responsible and reliable Director of the College and his presence was a contributing factor to its success and development.

May God bring him everlasting peace.

Hiroshige Shiota, M.D.
President, Japan Section

CHIBA, JAPAN

The membership of the Japan Section of the International College of Surgeons was deeply shocked to hear of the unbelievable death of our great and valued Executive Director of the International College of Surgeons, Dr. Ross T. McIntire, F.A.C.S. (Hon.), F.I.C.S. (Hon.). We extend our most heartfelt condolences to the bereaved family and to the College.

Komei Nakayama, M.D.
Secretary, Japan Section

In Tribute to Ross T. McIntire

MEXICO, D.F., MEXICO

La Sección Mexicana del Colegio Internacional de Cirujanos deplora grandemente el fallecimiento del Dr. Ross McIntire, Director Ejecutivo del propio Colegio, y hace presente su pésame por la sensible pérdida.

RAÚL ARTURO CHAVIRA, M.D.
Presidente de la Sección Mexicana

MEXICO D F MEXICO
PERMIT ME TO OFFER MY MOST PROFOUND CONDOLENCES UPON THE DEMISE OF THE DISTINGUISHED EXECUTIVE DIRECTOR OF THE INTERNATIONAL COLLEGE OF SURGEONS STOP WE HELD HIM IN HIGHEST ESTEEM
MANUEL A MANZANILLA MD VICE PRES
INTERNATIONAL COLLEGE OF SURGEONS

UTRECHT, THE NETHERLANDS

Unerwartet entriss der Tod dem International College of Surgeons seinen Executive Director, uns aber unseren verehrten und lieben Kollegen Ross T. McIntire.

Die Nachricht vom Hingang dieses allgemein geschätzten Vorstandsmitgliedes hat die Herzen der Sektionen des International College of Surgeons mit tiefster Trauer erfüllt. Haben wir nicht alle in seiner starken Persönlichkeit die unermüdliche Tatkraft und die grosse Liebenswürdigkeit bewundert?

Sein Leben war seit dem Antcitt seines verantwortungsvollen Postens ganz dem College gewidmet. Er gönnte sich keine Ruhestunde im Wirken für unsere gemeinsame Sache. Mit einer rührenden Hingabe setzte er sich für die Entwicklung der europäischen Sektionen ein. Er verschloss sich keinem Anliegen seiner Mitarbeiter—es galt ihm überall zu helfen, wo man seines tatkräftigen Einsatzes bedurfte. Noch vor kurzem, im Sommer 1959, führte ihn eine lange Reise nach Europa, wo er neue Kontakte zu legen vermochte und in gemeinsamen Besprechungen Neuerungen und Erweiterungen ins Auge fasste.

Sein Wirken war selbstlos und von einer unermesslichen Hingabe für das College erfüllt. In seiner Lebenshaltung bewahrheitet sich das Wort eines Souvestre: "Aimer quelque chose plus que soi-même, là est le secret de tout ce qui est grand."

Wenn der Verlust eines treuen Freundes schmerzliche Wunden in unsere Herzen reisst, so entspringt dem Gefühl der aufrichtige Wunsch, sein Andenken zu ehren. Wie könnten wir es aber besser tun, als uns ebenso selbstlos für unser College zu verwenden? Das International College of Surgeons hat eine Aufgabe zu erfüllen, die nur durch den Einsatz jedes Einzelnen gefördert werden kann. Besinnen wir uns auf seine tief menschlichen Zielsetzungen, und unsere Überzeugung wird zur Tat.

G. Chapchal, M.D.
President, The Netherlands Section

AMSTERDAM, THE NETHERLANDS

The telegram we received from Dr. Max Thorek, informing us of the sudden death of Dr. Ross McIntire gave us a great shock.

It is only a few months ago that he visited Amsterdam on a European tour as leader of a company of surgeons. Although I had met him only once, about thirty years ago, he remembered me immediately and recalled all the particulars of my visit to him in America. We spent some very pleasant days together exchanging ideas on modern surgery.

We can hardly imagine that McIntire, our good friend, has passed away. His death must be a severe blow for his dear family. The Dutch Section of the International College of Surgeons want to express their deep sympathy to his relatives in this great loss.

We shall never forget this famous surgeon who gave his whole life to his noble career.

A. Kummer, M.D.

LIMA PERU
PROFUNDAMENTE IMPRECIONADOS SENSIBLE FALLECIMIENTO DR ROSS MCINTIRE DIRECTOR EJECUTIVO INTERNATIONAL COLLEGE OF SURGEONS NOMBRE SECCION PERUANA PRESENTO USTED SENTIDA CONDOLENCIA IRREPARABLE PERDIDA EMINENTE CIRUJANO IRREMPLAXABLE FUNCIONARIO

LIMA, PERU

La gran familia médica universal especialmente la cirugía norteamericana que tanto ha contribuido a los extraordinarios avances de la cirugía moderna, tiene que lamentar otra pérdida irreparable, el fallecimiento del Dr. Ross T. McIntire, Director Ejecutivo del Colegio Internacional de Cirujanos. Los que hemos conocido de cerca el inmenso valer y las acrisoladas virtudes del ilustre cirujano, tenemos que reconocer que no obstante la solidez y magnitud de la Institución, su estructura vital sufre un impacto severo; y en nosotros mismos, cualquiera que sea al lugar del mundo en

donde estemos ubicados al servicio de nuestros altos deberes humanos y sociales, una honda congoja abate nuestros corazones y deprime nuestro espíritu.

Estábamos ya habituados al consejo y directivas inteligentes de Ross T. McIntire. Su constante actividad y atención a los miembros brillantes del Colegio, la metodización ejecutiva de sus actos, su identificación con las inspiraciones de ese gran maestro del mundo médico, fundador del Colegio que es el Profesor Max Thorek, su porte caballeresco y su incomparable gentileza, distinguían al ilustre desaparecido señalándolo con relieves propios.

Estamos pues de duelo en todos los rincones médicos en donde exista una filial del Colegio Internacional de Cirujanos. Lo estamos aquí en Lima, como en Buenos Aires y Londres, en México y Paris, en Italia y en la India; de todas partes surgirá un sentimiento solidario de dolor.

El vigoroso mecanismo del Colegio Internacional de Cirujanos, formado y nutrido a través de luchas y de esfuerzos, de sanos ideales y aspiraciones y sobre todo al amparo de los radiantes destellos de la solidaridad en la ciencia, ha recibido en vida de Ross T. McIntire, devota colaboración. Esta colaboración queda como una semilla sembrada en el fértil terreno del entendimiento médico universal y encontrará continuadores que prosigan sus hábiles gestiones.

Solo queda sobreponerse y sin desmayos continuar adelante. El Colegio Internacional de Cirujanos que está escribiendo con hechos su brillante historia y que es también renovada esperanza para el futuro creciente de la medicina continuará su misión, pero recordará con gratitud y devoción a quienes como Ross T. McIntire forjaron con dinamismo, talento y espiritualidad, la recia y ancha base de su grandeza.

Con estas sencillas expresiones, la Sección Peruana del Colegio Internacional de Cirujanos, rinde atribulado homenaje a su memoria.

Alberto Sabogal, M.D.
Secretario de la Sección Peruana

SAN JUAN, PHILIPPINES

I have received with profound regret the sad news of the passing of our beloved Executive Director, Admiral Ross T. McIntire.

The Officers and Fellows of the Philippine Section of the International College of Surgeons are sending their heartfelt condolences for the sudden demise of Admiral McIntire. His death is an irreparable loss not only to the International College of Surgeons but also to the medical profession as a whole.

Angel I. Reyes, M.D.
Secretary, Philippine Section

MADRID, SPAIN

The news of the death of Dr. Ross T. McIntire, Executive Director of the International College of Surgeons, caused immense grief to all those who had the privilege of being associated with him and of establishing a friendship with this outstanding surgeon, principally those like me who, only a few weeks ago, had the opportunity to share with him the tasks of the last Congress, in Chicago.

Our Director's remarkable personality and enthusiasm were well known. His death leaves an enormous gap.

Both the International College of Surgeons and international surgery lose one of their most valuable leaders, with Dr. McIntire's death.

We express our deepest condolence to Dr. Ross McIntire's family, to our Secretary General, Dr. Max Thorek, and to the International College of Surgeons.

Alfonso de la Peña, M.D.
President, Spanish Section

MADRID, SPAIN

La dolorosa noticia de la muerte del Dr. Ross T. McIntire nos ha causado una profunda impresión.

Los que hemos tenido ocasión de conocerle, los que pudimos apreciar su caballerosidad, su gran capacidad de trabajo y su gran juicio crítico, sabemos la gran pérdida que supone para el International College of Surgeons a cuyo servicio se hallaba totalmente dedicado y para nuestro fundador el Prof. Max Thorek que dificilmente encontrará un colaborador más eficaz y devoto que el insigne Dr. McIntire.

Francisco Martin Lagos, M.D.
Vice-Presidente del International College of Surgeons
Ex-Presidente del Capítulo Español

In Tribute to Ross T. McIntire

BARCELONA, SPAIN

It is late at night, but I must write you. I have just read of the death of Ross T. McIntire and all my thoughts are with you. I realize how deeply the passing of this close friend must affect you . . . I must make this note brief, for I have a heavy operating schedule for tomorrow, but I cannot think of even trying to sleep until I have attempted to express my sincere sympathy. . . . I wish, under the circumstances, that I could be with you.

José Soler-Roig, M.D.

STOCKHOLM, SWEDEN

I met Dr. Ross T. McIntire only once in Sweden and far too briefly in Chicago. Yet I had the impression that he was an absolutely honest man, loyal to his ideas and his tasks, a modest man who had accepted as the guiding principle of life that the important thing is doing one's duty.

Sten Friberg, M.D.

GENEVA, SWITZERLAND

We have been utterly crushed by the news of the sudden death of Admiral Ross T. McIntire! We consider it as an extremely great loss for the European Federation, for the whole of our College, and also for all those who have had the privilege of appreciating his exceptional qualities.

Dr. McIntire's memory will forever live in the minds of those who had come to know him, not only because of the important role he played during World War Two, but because of his great personality, the high conception he had of our profession, his absolute rectitude, his gentleness towards everyone and his entire devotion to the cause of the International College of Surgeons, to which he has given himself till the end.

Will you please, speaking for myself and in the name of the European Federation, forward to the family of our great colleague and friend, as well as to all the members of the Executive Committee, our most heartfelt sympathy and let them know how deeply we all regret the untimely end of our dearly loved colleague.

J. H. Oltramare, M.D.
Secretary, European Federation
International College of Surgeons

ZURICH, SWITZERLAND

It is with deepest regret that I learned the sad news of Admiral Ross T. McIntire's decease. I met him first in 1955 in Geneva and was greatly impressed by his outstanding personality. I know that the College has thus lost one of its great leaders and I feel sorrow for your missing a close personal friend.

I wish to convey to you and the College my sincere sympathy.

E. Kaiser, M.D.
President, Swiss Section

GENEVA, SWITZERLAND

J'ai appris hier, à une séance de l'Institut national genevois, par notre collègue commun, le Professeur J. H. Oltramare, que notre éminent directeur du Collège, le Dr. McIntire est mort subitement d'une affection cardiaque. J'avais une profonde amitié pour ce collègue et une grande estime pour l'homme exceptionnel qu'il fut. C'est une grande perte pour le Collège international et pour vous. Veuillez présenter mes sincères condoléances à Madame McIntire et à sa famille.

Albert Jentzer, M.D.
Member Board of Governors
International College of Surgeons

GENEVA, SWITZERLAND

We are terribly upset by the dreadful news of your cable. . . . Admiral McIntire's death is undoubtedly a great loss for the whole International College of Surgeons, for those who have had the privilege of working in close contact with him during many years, and for those also who did not have very many contacts with him but whom he won to himself by his outstanding personality.

Edwin Fawer
Administrative Secretary for Europe
International College of Surgeons

From Fellows of the College in England

BIRMINGHAM, ENGLAND

Those of us who had been fortunate enough to meet Ross T. McIntire recognized in him a true disciple of Aesculapius, for he showed steadfastness of purpose, had a high opinion of his fellows, was spontaneously kind and gracious immediately to all with whom he came into contact. His kindness and true charity brought men of all races, creeds, countries and status together in unity.

This he clearly showed in his enthusiasm for travel, that all men, particularly the young, could learn from those of other lands who were contributing valuable additions to our knowledge.

Alas! once again with his passing we realize the truth of the words of Ruskin. "Men cannot benefit those that are with them as they can benefit those who come after them." There is much that he labored for which will keep his memory alive in our hearts. We are truly grateful for the pleasure of his society during the past years and we congratulate those who had the benefit of his company during the Midsummer Postgraduate European tour. Would that I could have shared it, but I shall benefit from his efforts.

James F. Brailsford, M.D.

SHOLDEN, KENT, ENGLAND

We mourn the loss of Admiral Ross T. McIntire—a valiant sailor, a sound surgeon, a brilliant organizer, a beloved friend and, as Executive Director of the International College of Surgeons, a tower of strength.

Hamilton Bailey, F.R.C.S.

LONDON, ENGLAND

Though I did not have the privilege of a personal friendship with Admiral Ross T. McIntire I should like to send you and the International College my deep sympathy on the loss of one who had been such a tower of strength to the College.

Zachary Cope, F.R.C.S.

From Fellows of the College in the United States

MADISON, WISCONSIN

When Doctor Ross McIntire became Executive Director of the International College of Surgeons in 1955, it was my privilege to meet and travel with him on many occasions, both here and abroad. After the day's work was done, he would fascinate me with many stories of his wonderful experiences during the Roosevelt administration.

His modesty, charm and enthusiasm endeared him to everyone. He was always poised and at ease in the midst of a heated discussion, at a conference or in a large social gathering in the ballroom. Doctor McIntire carried his honors lightly, was a true friend, firm in his convictions but always honest and sincere. A leader in his field of rehabilitation, the good that he brought about will long endure, as will the memory of this fine gentleman.

Arnold S. Jackson, M.D.
Past President
United States Section

DALLAS, TEXAS

Others will recount Ross McIntire's executive ability, administrative efficiency and his high hopes for the future of the International College. I must admit that, above and aside from all of these characteristics, I chiefly mourn the departure of a friend. The Admiral had a tremendous capacity for the give and take of genuine friendship. Unfailingly cheerful, he seemed always to turn his most optimistic countenance toward those with whom he associated and to pass off with a humorous gesture the annoyances which come to all of us during our daily routine. Never was this faculty better demonstrated than on our mid-European journey in the summer of 1959 when even the responsibilities attendant upon his executive duties during our trip failed to dampen his spirits or diminish his zest when among his friends, among whom I was very proud to be counted.

Curtice Rosser, M.D.
Past President
United States Section

NEW YORK CITY

I first came into contact with Ross McIntire in 1926, when, as a Lieutenant (j.g.), U.S.N., status interne, I was in the old U. S. Naval Hospital in Washington, D. C., and he was in charge of the otolaryngological ward. He guided my hands in my first tonsillectomy, antrum puncture, and resection of deflected nasal septum. I was immediately impressed by his kindness and "desire to help in everything."

In Tribute to Ross T. McIntire

During the many ensuing years, I had only sporadic contacts with him until he came to the International College of Surgeons.

Since then, we had many intimate talks during which he expounded his marvelous plans for the College. His point of view was that of a young and eager surgeon envisaging a long and fully active life before him.

Here was a man who had risen to the very pinnacle of his career as a naval surgeon, had had the opportunity for outstanding service to his country, was the personal physician to the President of the United States for all of his terms, during World War II. No man could have received more honors, justly awarded. He was in a position to sit back gracefully and enjoy memories of great experiences that it is given to very few to have gone through. Yet, his sense of desire to be of service and to accept new challenges in life was so strong that he could not be content with idleness or perfunctory activities. Perceiving what could be done for all surgeons, he accepted the post of Executive Director of the International College of Surgeons and threw himself into his work with all his enthusiasm.

For himself, he had nothing to gain. He required no further recognition. Additional honors could only be of secondary importance to those he already had. His identifying himself with the International College of Surgeons could only have had one objective and that was to satisfy his tremendous and innate altruism.

By his demise, the International College of Surgeons has suffered an irreparable loss.

Alexander Brunschwig, M.D.
Vice-President
International College of Surgeons

PHILADELPHIA, PENNSYLVANIA

In the death of Doctor Ross T. McIntire, Executive Director of our organization, the International College of Surgeons has suffered an irreparable loss.

Admiral McIntire was a man who made friends easily. He had a wonderful personality which electrified all those with whom he came in contact. At the scientific sessions of the annual and sectional meetings he lent considerable luster by his presence. His knowledge of medicine in which he was most interested was supreme. He was an able speaker. His diction was perfect and the messages he purveyed were informative and educational.

He was my good friend. He always addressed me as "Doctor Moe," from which I got quite a thrill. His death is a great personal loss to me.

Moses Behrend, M.D.
Vice-President
United States Section

PHILADELPHIA PENNSYLVANIA
THE PASSING OF ROSS T MCINTIRE IS A GREAT
LOSS TO THE COLLEGE AND TO HIS MANY FRIENDS
ALL OVER THE WORLD
W W BABCOCK MD
HONORARY CHAIRMAN QUALIFICATION
CREDENTIALS AND EXAMINATION COUNCIL

CHICAGO, ILLINOIS

One of the great privileges of my life has been my friendship with Dr. Ross T. McIntire.

A man of eminent achievement and distinguished service to his nation and his profession, Dr. McIntire possessed an all-embracing sympathy for the race of man and could think of life for himself only in terms of effort toward human betterment. Fortunately, it was given him to work through his very last day. We all miss him more than we even dare to think, but we are grateful for the years of wise administration he gave to the International College of Surgeons and of good comradeship to all of us.

Philip Thorek, M.D.
Associate Secretary
International College of Surgeons

CHICAGO ILLINOIS
DURING HIS SERVICE AS EXECUTIVE DIRECTOR OF
THE INTERNATIONAL COLLEGE OF SURGEONS
ROSS T MCINTIRE MADE FRIENDS WITH ALL WHO
CAME IN CONTACT WITH HIM HAVING MADE
MANY TRIPS TO MEDICAL MEETINGS WITH HIM
AND AS AN OFFICER OF THE INTERNATIONAL
COLLEGE OF SURGEONS I HAD AMPLE
OPPORTUNITY TO KNOW HIM AND TO EVALUATE
HIS TRUE WORTH HIS WILLINGNESS TO ASSIST
AND GIVE AID AND COMFORT TO HIS FRIENDS
AND ASSOCIATES WAS ONE OF THE ADMIRABLE
FEATURES OF HIS OUTSTANDING CHARACTER
THE COLLEGE HAS SUSTAINED A GREAT LOSS IN
HIS DEMISE AND HE WILL BE MISSED FOR MANY
YEARS TO COME
OSCAR B NUGENT MD
TREASURER UNITED STATES SECTION

In Tribute to Ross T. McIntire

BIRMINGHAM, ALABAMA

The homegoing of Dr. Ross T. McIntire leaves a vacancy in our hearts which can never be filled. The International College of Surgeons has lost one of its great leaders and directors.

A man of character, of ability as a leader and as a medical man as well as a diplomat and executive, he made friends for himself and the International College of Surgeons wherever he went. He was one who could walk and talk with kings and the nobility but he never lost touch with the common man.

The sick and disabled were his great concern, as exemplified in his untiring efforts to aid the handicapped.

Admiral McIntire was loved and admired by all. In the homes where he visited even little children were inspired. The nations he visited and members he won for the College will say farewell for a while but he has left his "footprints on the sands of time."

We shall remember him as a great leader, a devoted friend, a Christian gentleman whom we all loved and are inspired to emulate. We shall recall his noble work and character as a great physician, an outstanding executive, an obedient soldier, and a beloved friend.

Gilbert F. Douglas, M.D.
Vice-President
United States Section

NEW YORK CITY

The passing of the Executive Director of the International College of Surgeons, Dr. Ross McIntire, creates a vacancy that will be felt not for one year but for many years to come. His standards for medical education were very high; his vision for the future of the College far-reaching. As a former Surgeon General of the U.S. Navy, he was able to bring to our College an international approach to its needs. Dr. McIntire was truly an outstanding officer of the College.

Horace E. Ayers, M.D.
Vice-President
International College of Surgeons

KANSAS CITY MISSOURI

SHOCKED TO HEAR OF THE SUDDEN DEATH OF ROSS T MCINTIRE WE SHALL MISS HIM GREATLY

CLAUDE J HUNT MD
VICE PRESIDENT UNITED STATES SECTION

CHICAGO, ILLINOIS

Ross T. McIntire's sudden death was a shock from which I have not as yet recovered. Only three days earlier, I had been at an annual function with him, and on the very day before he died I was in conference with him concerning the 1960 budget for the College. On both occasions he was in excellent spirits and full of plans for the College.

Ross T. McIntire served the College faithfully and with distinction. He was generous in sharing credit with all who worked with him. I have never met a man with higher ideals and greater integrity. Having achieved much, he had little ambition for himself and sought only an opportunity to advance human welfare. His great interest, of course, was *the rehabilitation program for the handicapped.*

The College will miss him greatly, and the many friends that he made since he became Executive Director of the College will miss him beyond description.

Horace E. Turner, M.D.
Associate Secretary
International College of Surgeons

SOUTH MIAMI FLORIDA

THE DEATH OF ROSS T MCINTIRE IS A TRAGIC LOSS TO ALL OF US HE WAS AN ABLE EXECUTIVE AND A DEVOTED FELLOW OF THE COLLEGE

HAROLD O HALLSTRAND MD
VICE PRESIDENT UNITED STATES SECTION

LOS ANGELES, CALIFORNIA

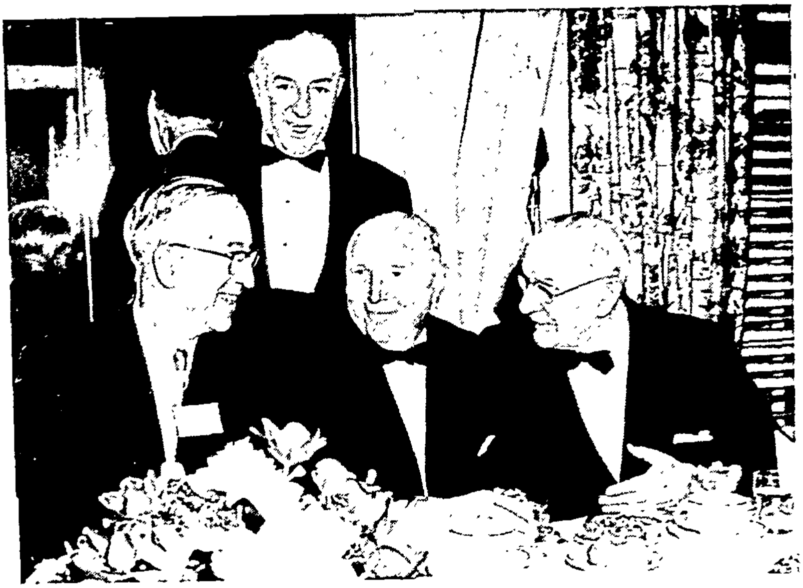
The death of Ross T. McIntire came as a numbing shock to us in California. We have lost a friend; the College one of its strongest pillars.

A diplomatic approach, innate knowledge of public relations and a trustworthy frankness were his invaluable assets as Executive Director of the International College of Surgeons.

In every endeavor, Dr. McIntire gave of himself to the fullest extent. His record in the Navy has never been surpassed. The handicapped people of the United States and, for that matter, of the world, owe him a great debt of gratitude for his humanitarian principles and ideals.

To this man of action, his abilities, his capabilities, his keenness of mind, his regard

In Tribute to Ross T. McIntire



Dr. McIntire, seated between Dr. Arnold S. Jackson and Dr. Max Thorek, with Dr. Earl J. Halligan standing, enjoying the flow of wit at the banquet of the New Jersey Chapter meeting in Jersey City, May 1955

for the ill and afflicted, his searching desire to bring about friendship and brotherhood among all the people of the earth, his unselfish attitude toward mankind, will in themselves create an eternal monument in the hearts of men.

J. M. de los Reyes, M.D.
Vice-President
United States Section

NEW ORLEANS, LOUISIANA

Rarely has an organization been so fortunate as to have been served by a dedicated and sagacious man. Our Executive Director, Admiral Ross T. McIntire, was such a man. While his talents were recognized throughout the entire world, his wisdom and counsel evoked the admiration and respect of those with whom he served. His untimely death is cause for deep personal sorrow; his loss to the College is inestimable.

Neal Owens, M.D.
Vice-President
United States Section

ROCHESTER, MINNESOTA

I was very sorry to learn that Ross McIntire had passed away. He was a great leader. I served during the war in the U. S. Navy Medical Corps and on several occasions was able to accomplish necessary things for a sorely distressed group of paraplegics by appealing to him direct after attempts through normal channels had failed.

He was a realist and had an unusual capacity quickly to make decisions and come to conclusions which were based on sound reasoning. In my contacts with him in the International College of Surgeons I was impressed with his eagerness to provide programs of real appeal to the general surgeon. As a leader in the Navy and later in the College it can truly be said that he spent his life doing the thing he liked best—working tirelessly to improve the practice of medicine and surgery. He will be missed by thousands of friends.

Gershom J. Thompson, M.D.
Vice-President
United States Section

In Tribute to Ross T. McIntire

JERSEY CITY NEW JERSEY

PROFOUNDLY GRIEVED TO HEAR OF DR MCINTIRES DEATH THE LOSS TO THE COLLEGE IS VERY GREAT INDEED

EARL J HALLIGAN MD
VICE PRESIDENT UNITED STATES SECTION

From the President of the Woman's Auxiliary

KNOXVILLE, TENNESSEE

Few people can crowd so many worthwhile pursuits into a lifetime as did Admiral Ross T. McIntire in his three score and ten years. The spread of these activities was almost incredible. He achieved a stature that is rare.

Many men who have attained the position of success and honor often retire into a life of lesser interests, but Admiral McIntire chose to continue to serve humanity in his effective way through his association with the International College of Surgeons.

The Woman's Auxiliary to the International College of Surgeons had the pleasure of knowing him as a friend and adviser. The memory of his warmth and rare spirit will continue to inspire us. He devoted much time to our affairs and gave us his full support. We shall indeed miss him.

Virginia Whisman Niceley
President, Woman's Auxiliary
United States Section

From Distinguished Friends

PROVIDENCE, RHODE ISLAND

It is with a very *triste* heart that I am writing this letter. Hanna (Mrs. Speidel) came into my den all excited last evening and told me she had heard over television news that Dr. Ross T. McIntire, whom we both liked so very much, had died . . . Please be assured of our deepest sympathy and that we are sincerely mourning his untimely death.

Hanna joins me in hoping that the Lord may console you and all of us in this sad event.

Edwin (Speidel)

CHICAGO, ILLINOIS

It was with deep consternation and a sincere feeling of personal loss that I read about the sudden demise of our good friend, Dr. Ross T. McIntire. We have all lost a wise, imaginative and gay friend and I know it will be hard for all of us to reconcile ourselves to his not being with us any longer.

Ilza Veith
Associate Professor in the
History of Medicine

CHICAGO, ILLINOIS

Words cannot express how shocked and saddened I was to learn of the sudden passing of our dear friend, Dr. Ross T. McIntire.

Through his passing the world has lost one of its finest doctors and a great leader. There is little one can say at such a time, but I do want to extend my deepest and most heartfelt sympathy.

Maurice Goldblatt

From the Regions

SAN FRANCISCO, CALIFORNIA

I take this opportunity of expressing my heartfelt condolences to you. Dr. Ross T. McIntire's death was a great blow to us here on the West Coast. Needless to say, you must feel his loss very deeply. He was a devoted officer of the College.

Charles Pierre Mathé, M.D.
Vice-Regent
Northern California

LOS ANGELES CALIFORNIA

DISCONSOLATE ABOUT THE DEATH OF ADMIRAL MCINTIRE WE LOST A WONDERFUL FRIEND THE COLLEGE A GREAT PILLAR

SOUTHERN CALIFORNIA REGION

WASHINGTON, D. C.

Ross T. McIntire was one of the best known doctors of his time. Perhaps most people remember him as President Roosevelt's personal physician. To the United States Navy he was the World War II Surgeon General who developed the Medical Corps to its peak of size and efficiency. To members of the College he was both friend and colleague. Although Executive Director, he never displayed the attitude of a Commanding Officer. He was always available whether at a meeting or on long distance telephone and ready to carry out a suggestion or a plan. Because he was friendly and useful, he will be sorely missed.

James W. Watts, M.D.
Regent, District of Columbia

ORLANDO FLORIDA
MEMBERS OF THE FLORIDA CHAPTER OF
INTERNATIONAL COLLEGE OF SURGEONS WERE
STUNNED AND SADDENED AT THE NEWS OF
DOCTOR ROSS T MCINTIRES SUDDEN DEMISE
HIS DEVOTION LOYALTY AND UNTIRING EFFORTS
ON BEHALF OF OUR COLLEGE WILL LONG BE
REMEMBERED MAY WE EXTEND OUR DEEPEST
SYMPATHY TO MRS MCINTIRE AND HIS FAMILY
DON C ROBERTSON MD REGENT STATE OF FLORIDA

ATLANTA, GEORGIA

It is with shock and deepest regret that we heard of the untimely passing of our dear personal friend, Dr. Ross McIntire. He will be sorely missed by our entire group here in Georgia. He had been with us so often, we had come to know him, love him, respect him and depend upon him. He was one of the great physicians, humanitarians and personages of our time. Wherever the Admiral went, his reputation went ahead of him and he was never a stranger in any part of the world, but an honored and respected friend.

Our prayer is that the Lord in his infinite mercy will receive him and bestow upon him the privileges he so well deserves.

A. H. Letton, M.D.
Regent, State of Georgia

HONOLULU, HAWAII

The members of the International College of Surgeons in Hawaii were indeed shocked and saddened about the news of the death of our beloved colleague, Dr. Ross McIntire.

We will miss him greatly. He had many friends in Hawaii, where he visited frequently during the war as Surgeon General of the Navy and later in his capacity of Executive Director for the International College of Surgeons.

The Honolulu Section send their heartfelt sympathy to Mrs. McIntire. His passing will be a great loss to all of us.

Ralph B. Cloward, M.D.
Regent, State of Hawaii

LOUISVILLE, KENTUCKY

Early in the morning of December 8, 1959, and after only a few brief hours of illness there passed from our midst Dr. Ross T. McIntire, creating a loss which can never be reclaimed.

Dr. McIntire spent his active life in the service of others. Joining the Medical Corps of the United States Navy in 1917, he served the nation with outstanding ability, reaching the highest possible peak in this service. In office, he served with exceptional distinction, fairness and loyalty—a loyalty only to the course which had to be followed.

After his retirement, the feeling for service to his fellow man induced him to serve in numerous organizations, where he again achieved national prominence. He came to us in the International College of Surgeons, and again served with distinction. He greatly endeared himself to the hearts of his fellow members.

We who knew him best knew him as a generous man of great ability, giving of himself easily and freely, and the great heart which beat so strongly in the service of others at last failed its owner.

We who counted him friend hope that we may know him again, and that when we meet in the great beyond we shall find him in complete contentment. No man could be more deserving.

J. Andrew Bowen, M.D.
Regent, State of Kentucky

CROWLEY LOUISIANA
SORRY TO LEARN OF DR ROSS T MCINTIRES
SUDDEN DEATH HE WILL BE GREATLY MISSED
E S PETERMAN

LANSING, MICHIGAN

Positions of distinction have kept the name of Ross T. McIntire in the range of public vision since the early days of his medical professional career. His recognitions have kept him known to me almost throughout my medical life. Even had I not been in medicine, I am sure I should have felt acquainted.

The intimacy of recent years makes the accomplishments of Doctor McIntire very vivid

In Tribute to Ross T. McIntire

Dr. McIntire, at right, with Dr. Ralph R. Coffey of Kansas City, Missouri, Chairman of the Board of Regents, and Dr. Max M. Simon of Poughkeepsie, New York, at the Second Meeting of the New York State Surgical Division of the College at Lake Placid, May 1957

to me. The privilege of this association causes his passing to be a personal loss.

Earl Ingram Carr, M.D.
Member, Credentials Committee

RENO, NEVADA

Friends from Nevada join with other friends around the world in a feeling of deep personal and general loss at the unexpected death of Admiral Ross McIntire. His dynamic, positive and progressive personality was a stimulus and example to all of us.

Few doctors have had equal opportunity with Dr. McIntire to promote international medical friendship and cooperation and none has excelled him in results accomplished.

We shall miss his cheerful, friendly words and wise counsel.

Fred M. Anderson, M.D.
Regent, State of Nevada

OKLAHOMA CITY, OKLAHOMA

The sad news of the death of our Executive Director, Dr. Ross McIntire, shocked and grieved me. I feel a sense of personal loss in his passing. I now hold in memory many of his helpful, practical and considerate suggestions in the efficient conduct of the affairs of the International College in the State of Oklahoma.

May the great soul of our cherished associate find rest eternal.

L. J. Starry, M.D.
Regent, State of Oklahoma

PORTLAND, OREGON

I have been saddened and deeply shocked on learning of the sudden passing of our great friend, Dr. Ross T. McIntire, Executive Director of the International College of Surgeons.

We and our College suffered the irrevocable loss of a most powerful, able, and enthusiastic leader. And all who knew him so well have lost a loyal and faithful friend.

Ross was possessed of a warm and genial heart and a most unobtrusive modesty and personality. His remarkable capabilities gave him a rare and subtle knack of leadership and the ability to make friends throughout the entire world.

Our limited intellects can fathom no reasons for the deft, yet inexplicable Hand of Fate which so often swiftly descends to take from our midst one, like our Ross, who is loved and cherished. May we carry on as Ross would have us do until our turns are called.

We mourn the loss of Dr. McIntire and extend to Mrs. McIntire and the family our most reverent and heartfelt sympathy.

Ben N. Wade, M.D.
Regent, State of Oregon

In Tribute to Ross T. McIntire

PHILADELPHIA, PENNSYLVANIA

Dr. Ross T. McIntire was a person basically given to the service of his country and his flag and was a devoted member of the International College of Surgeons.

He gave himself unselfishly to mankind. He was the recipient of numerous decorations from the United States and from a number of foreign countries and was honored by surgeons both in the United States and abroad.

He will be greatly missed by a host of friends. His friendly, smiling countenance and his sound reasoning were an inspiration to all of us in the International College who worked with him.

Lowrain E. McCrea, M.D.
Regent, State of Pennsylvania

CHATTANOOGA, TENNESSEE

The Tennessee Chapter of the International College of Surgeons mourns the sudden death of Dr. Ross T. McIntire, our beloved Executive Director of the College.

He served the College effectively, after retiring from government service. His wide experience as Surgeon General of the United States Navy and as personal physician to President Franklin D. Roosevelt throughout his administration fitted him for his position as Executive Director of the College, and his wealth of diplomatic knowledge enabled him to make a worthy contribution to the achievements of the College.

The College has indeed suffered a great loss and he will be greatly missed.

William G. Stephenson, M.D.
Regent, State of Tennessee

ROANOKE, VIRGINIA

It was a profound shock to me to hear of our Executive Director's death.

I know I express the sentiments of everyone connected with the College when I say that we have lost the services of a wonderful man in every way.

I wish to extend to Dr. McIntire's family and to the College my deepest sympathy.

E. G. Gill, M.D.
Regent, State of Virginia

SEATTLE WASHINGTON

THE LOSS OF ROSS MCINTIRE COMES AS A BLOW NOT ONLY TO ME PERSONALLY BUT TO THE COLLEGE FORTUNATELY HIS EFFORTS HAVE BEEN SO DYNAMIC THAT THE COLLEGE SHOULD CONTINUE STEADILY ON ITS UPWARD ROAD ALL OF US ARE THANKFUL FOR THE OPPORTUNITY OF HAVING WORKED WITH ROSS AND THE MEMORY OF HIS ENTHUSIASM AND SINCERITY WILL HELP US ALL TO CARRY ON

ROGER ANDERSON MD
REGENT STATE OF WASHINGTON

MADISON, WISCONSIN

One could learn of the death of Dr. Ross McIntire only with profound regret and an indescribable feeling of personal loss. To have known him was a rare privilege. American medicine can be proud of him. The contributions which he had been able to make to world medicine and betterment of international relations through his offices in the International College of Surgeons will be sorely missed.

Geo. B. Ewell, M.D.
Regent, State of Wisconsin

CHEYENNE, WYOMING

I was shocked beyond expression to learn of the sudden and unexpected death of Dr. Ross T. McIntire, Executive Director of the International College of Surgeons, as I am sure all other doctors were who had known him in past years.

Dr. McIntire made a great contribution to the medical profession, having served as personal physician to President Franklin D. Roosevelt and as Surgeon General in the Navy. Particularly, he will be missed by the members of the International College of Surgeons because of the outstanding work he has done as Executive Director in our behalf.

W. Andrew Bunten, M.D.
Regent, State of Wyoming

To the many of Dr. McIntire's associates and admirers and to the numerous friends of the International College of Surgeons whose messages of tribute and sympathy were received and greatly appreciated but unfortunately had to be omitted from these pages because of the sheer limitation of space, the Editor begs to offer his earnest apologies.

CHICAGO, ILLINOIS

During the years in which I had the privilege of working with Dr. Ross T. McIntire on various committees, I became more and more aware of his high qualities, particularly his warm personality and able leadership.

We are all deeply shocked by his untimely passing, realizing the great loss to the medical profession and especially to the International College of Surgeons. He will be sorely missed by myself and everyone who had occasion to come in contact with him.

Herbert Pollack, M.D.
Chairman, Hall of Fame Committee

CHICAGO, ILLINOIS

The loss of Dr. McIntire was a terrible blow to the College. We have been fortunate, however, in having him give us the benefit of his broad experience.

I should like to suggest naming one of the rooms in the Hall of Fame in his honor.

Frederick Stenn, M.D.
Member, Hall of Fame Committee

CHICAGO ILLINOIS

MAY I EXPRESS MY DEEPEST SYMPATHY UPON THE LOSS OF DR ROSS T MCINTIRE DURING THE SHORT TIME THAT I HAVE HAD THE PRIVILEGE TO SERVE AS A COMMITTEE MEMBER FOR THE INTERNATIONAL SURGEONS HALL OF FAME I GREATLY ENJOYED MY ASSOCIATION WITH HIM WE SHALL MISS HIM

H J ANATOLE JARO

From the College Home

CHICAGO, ILLINOIS

To the well-merited tributes paid to Dr. Ross T. McIntire by his distinguished compatriots, comrades in the Navy Medical Service and the world's leaders in surgery, the employees of the International College of Surgeons in Chicago, who worked with him or under his jurisdiction, wish to add their own affectionate words of appreciation. In all his dealings with them he was unfailingly just, considerate and courteous, and through his death they feel they are bereaved of a personal friend.

Dr. McIntire, seated at the left; Dr. Morris Fishbein of Chicago; Dr. William G. Stephenson of Chattanooga, Regent of Tennessee; Dr. Park Niceley of Knoxville, Vice-Regent; and standing, Dr. Moore J. Smith, Jr., of Chattanooga; Dr. E. Vincent Askey, President-Elect of the American Medical Association; Dr. Guy M. Francis, President of the Tennessee Chapter of the College; Dr. Chester C. Guy of Chicago, and Dr. Lyon H. Appleby of Vancouver, B.C., First Vice-President of the International College of Surgeons, at the luncheon meeting of the Tennessee State Chapter in Chattanooga, September 1959

International College of Surgeons Scholarships

The Woman's Auxiliary to the United States Section of the International College of Surgeons is offering two prizes of three hundred dollars each for the most meritorious investigation in some phase of surgery or in the allied specialties of surgery. The investigation may be also in the fundamental sciences, provided the work has a definite bearing on some accredited surgical problem.

Eligibility

Competition for 1960 is open to graduates of medical schools who completed their internship or one year of residency within a period of five years prior to January 1, 1960, excluding their terms of service in the Armed Forces.

Time Limit

Manuscripts must be submitted to the Chairman of the Scholarship Committee of the United States Section of the International College of Surgeons, 1516 Lake Shore Drive, Chicago 10, Illinois, not later than July 1, 1960.

The manuscripts of the prize papers, as submitted, are to become the property of the International College of Surgeons.

The prize winners must present their papers at a meeting of the College.

If no paper submitted is deemed worthy of the prize, the award may be withheld at the discretion of the Scholarship Committee.

For further details, address all inquires to the attention of

Dr. Horace E. Turner
Chairman of the Scholarship Committee
1516 Lake Shore Drive
Chicago 10, Illinois

IN SIGHT FOR '60

ROME!

May 15-18

12th Biennial World Congress of I.C.S.
4 outstanding inclusive tours with rates beginning at $1260.00

also

Special Meetings

PARIS

May 12-13

Scheduled meeting of French Section of the I.C.S.—preceding the Rome Congress.

TEL AVIV — JERUSALEM

May 21-23

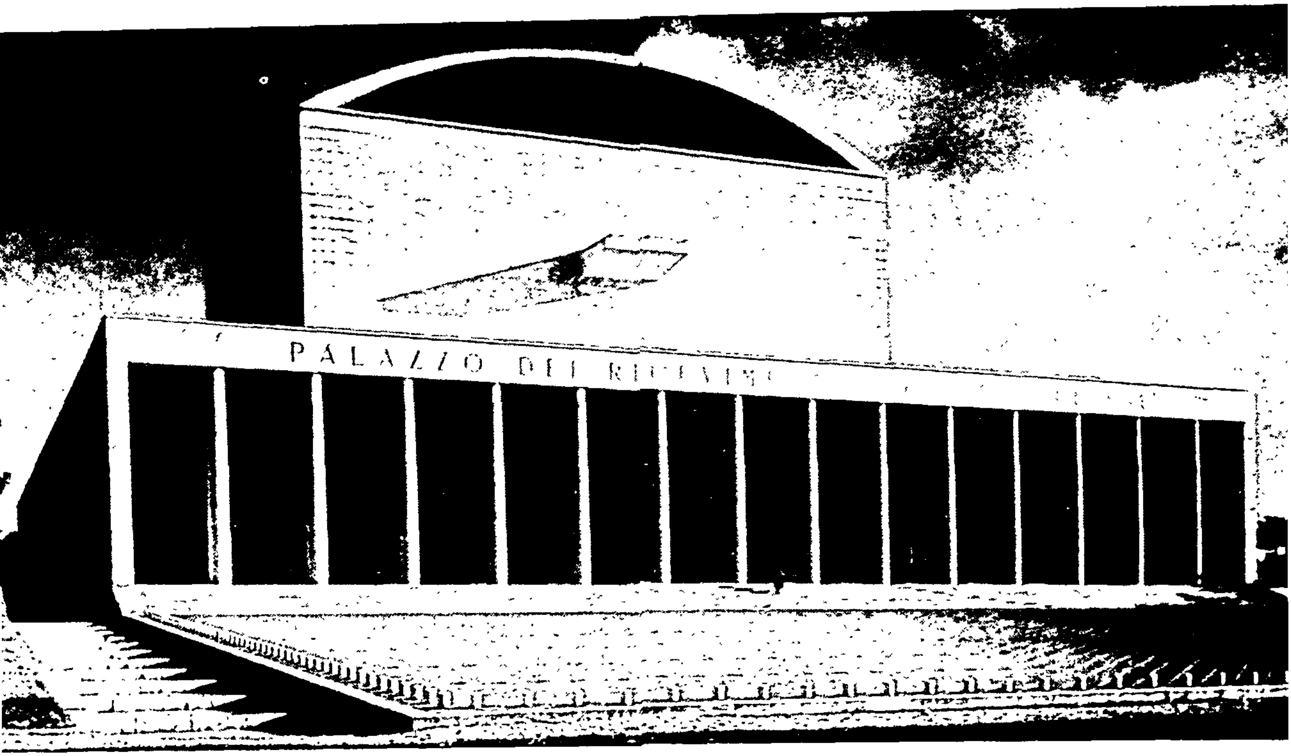
Special 11 day Israel tour departing Rome May 19th. Tour rates $670.00 to $775.00.

To reserve for yourself and party, write to International Travel Service, Inc., official travel representative for the International College of Surgeons.

INTERNATIONAL TRAVEL Service INC.

"in the Palmer House"

119 South State Street **Chicago 3, Illinois** **Financial 6-3750**



Palazzo dei Congressi—Esposizione Universale di Roma (E.U.R.), Viale Cristoforo Colombo, Rome
Congress Meeting Place

Twelfth Biennial International Congress

INTERNATIONAL COLLEGE OF SURGEONS

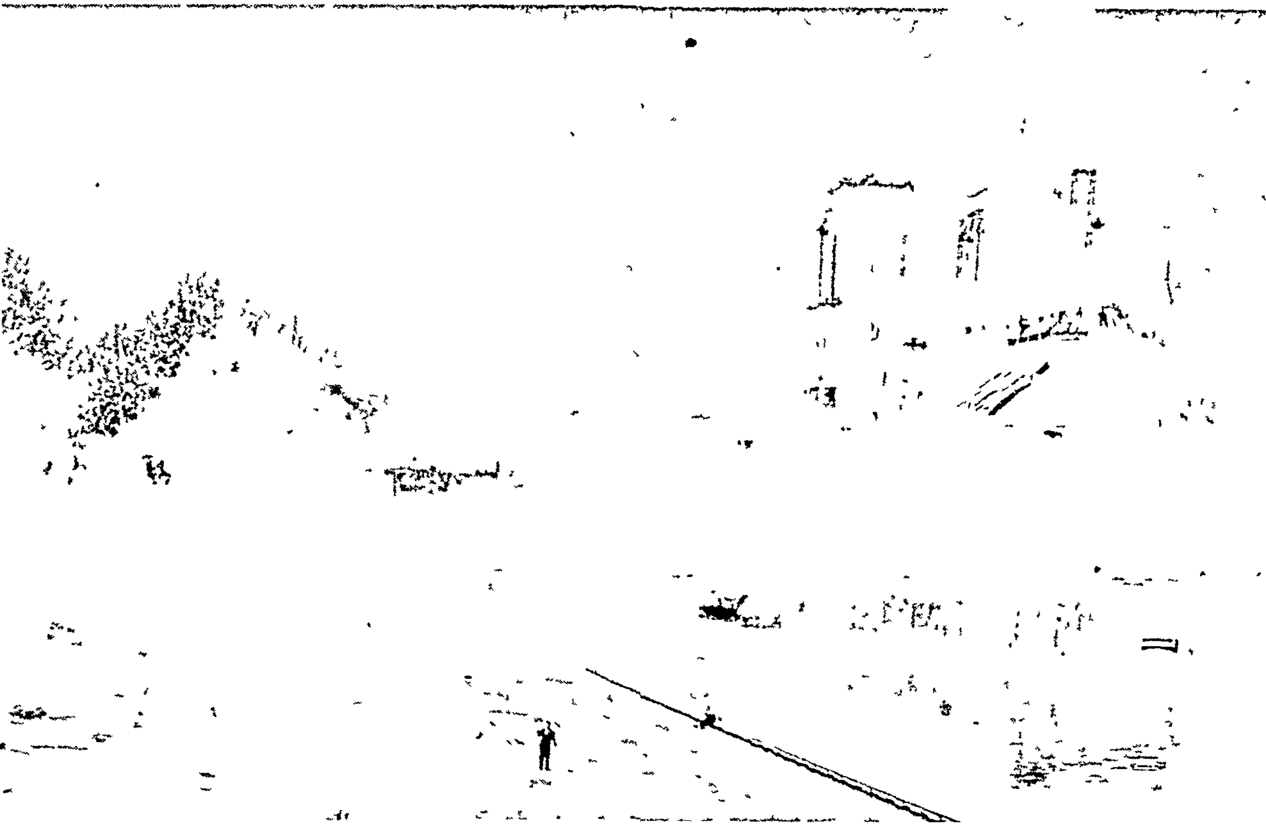
May 15-18, 1960 Rome, Italy

The official preliminary program for the Twelfth Biennial International Congress appeared in the December 1959 issue of the *Bulletin*. If, by chance, you have mislaid the *Bulletin* and would like a copy of the program itself, write to the International College of Surgeons, at 1516 Lake Shore Drive, Chicago 10, Illinois, and one will be sent to you promptly.

It is an intriguing program, so broad and varied in scope as to provide ample opportunity for the general surgeon to pick sessions of direct value to him. At the same time, specialty sections will be convening to explore deeply and technically specific aspects of surgery and allied sciences.

The program committee is sparing no effort to make the scientific sessions of the Congress particularly stimulating. English will be one of the five official languages, and translation will be simultaneous. (The other official languages will be Italian, French, German and Spanish.)

Comfortable hotel accommodations are available, but congressists are urged to make reservations promptly. The Olympic games are bound to attract a great many



Tree-shaded walks, the river Seine, the bridge known as the Archbishop's (l'Archevêché) and the Cathedral of Notre Dame on the Ile de la Cité—the heart of Paris

tourists. For the sake of being sure of good lodging and good transportation, it is wise to complete arrangements at once.

In view of the fact that the Congress is under the auspices of His Excellency, the President of the Republic of Italy, and has the good will and approval of all of Rome, audiences with high-ranking religious and civic figures may be granted to members of the College.

Arrangements for social activities are most inviting. Rome, with her long and varied tradition, has much to offer the visitor. He is likely to want never to leave, and to do so only upon promising himself that he will soon return.

Flight to Rome and back to any part of the world now is so brief and convenient and comfortable that doubtless many Fellows will come to the Congress allowing themselves just a few days snatched from a busy schedule. Others may be able to combine attendance at the Congress with a vacation, perhaps including their wives and even their families. For these, the College has planned a number of tours, varying in extent and duration.

All of the tours will offer comfort and relaxation and the stimulation of travel through beautiful and historic places, and all of them will provide an opportunity for the surgeons to visit clinics and hospitals and confer with Fellows of the College.

Two Sections, however, have scheduled special meetings in their own countries to enhance the scientific interest of these tours.

The French Section will hold a formal National Congress in Paris, May 12-13.

Preparations for the Congress are elaborate and on a large scale. It will be a major surgical event of the year, with the best of French surgical science and the cooperation of visiting surgeons bent on giving it important serious content. As to sociability, who in the College is not familiar, if only through hearsay, with the genial good fellowship of the French Section?

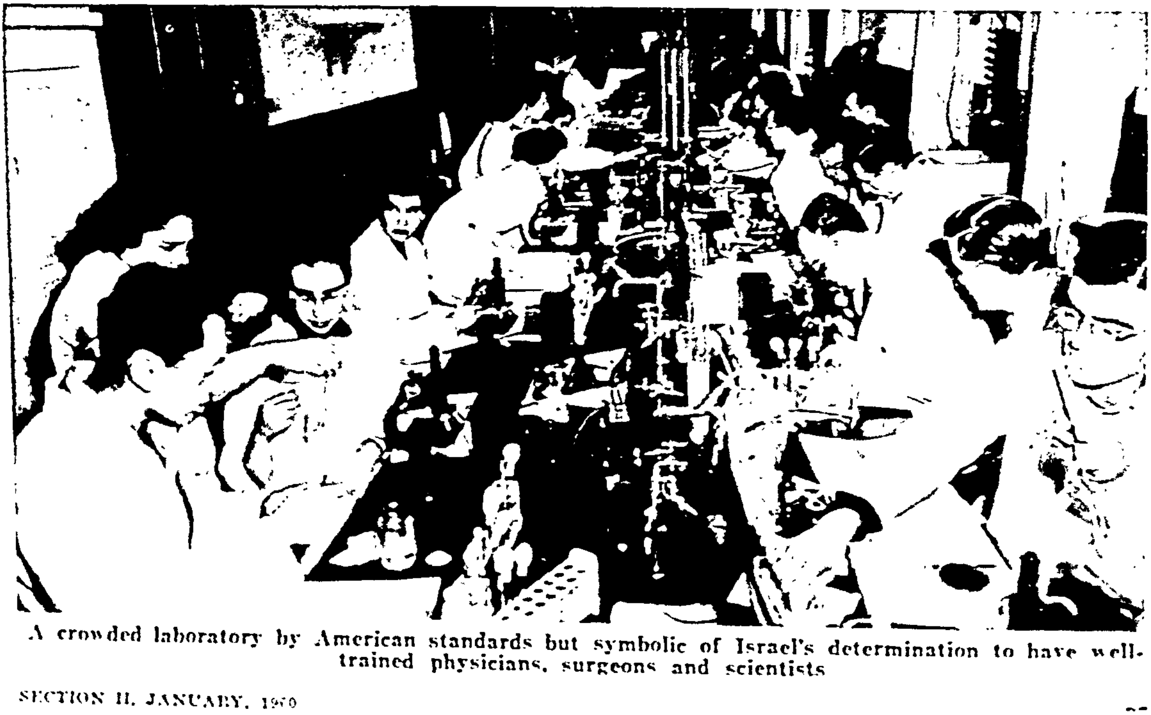
The Israel Section of the International College of Surgeons, together with the Ministry of Health of the State of Israel, on the other hand, is extending an invitation to all Fellows of the College to attend a Post-Congress International Conference of Surgeons in Tel Aviv and Jerusalem, May 21-23.

It will be an interesting experience to see what a small—a very small—and a newly independent nation can do to establish medical and surgical institutions and provide services and facilities to combat and eradicate a host of endemic and chronic diseases previously associated with large segments of its population. So a tour has been arranged which will permit investigation of numerous and varied institutions throughout the country.

At the same time Fellows of the College and their families will be able to visit the shrines and holy places and places of general historical interest, including archeological "diggings" and museums. In a sense, of course, all of Israel is an archeological museum.

Perhaps, too, the rapid industrialization, the necessity of absorbing diverse groups of refugees, and the consequent social and political evolvements will be of interest to the visitors, particularly the effort at physical and psychological rehabilitation as an integral part of the national program of building a modern democratic nation.

For details on the three Congresses, Paris—ROME—Israel, write to the Secretariat of the International College of Surgeons, 1516 Lake Shore Drive, Chicago, Illinois. For travel arrangements write direct to the International Travel Service, Inc., 119 South State Street, Chicago, Illinois.



A crowded laboratory by American standards but symbolic of Israel's determination to have well-trained physicians, surgeons and scientists

Section News

ECUADOR

El Guide Curso Intensivo Sobre Audiocirugia en España

Enrique Ortega Moreira M.D., F.I.C.S.

Organizado por la cátedra de Patología Quirúrgica de la Facultad de Medicina de Madrid, en colaboración con el Instituto Nacional de Medicina i Seguridad del Trabajo tuvo lugar el III Curso intensivo de audiocirugía, desde el 13 al 22 de Marzo de 1959, bajo la dirección del Jefe del Servicio de audiología, **Dr. Francisco Antolí-Candela.**

Dicho curso tuvo un caracter teórico-practico iniciando sus actividades a las nueve de la mañana i terminando a las seis de la tarde, con un pequeño intervalo para el lunch a las 2 P.M.

Diariamente se efectuaba un symposium, i práctica-s en el cadaver i en el vivo alternativamente.

Las plazas fueron limitadas a diez i seis cursillistas: diez nacionales i seis extranjeros, siendo las mitad de estos últimos reservadas a los miembros del internacional College of Surgeons.

Dado el prestigio que goza la Otología española i la cordialidad natural con que en España reciben a los extranjeros hizo muy agradable nuestra permanencia en la capital española.

Entre los profesores que intervinieron en el mencionado curso, podemos citar entre otros a los **Dres: Francisco i Fernando Antoli-Candela, L. García Ibañez,** quienes han tenido destacada actuación en el Congreso Internacional (quinto) reunido en Amsterdam en 1953, i que en unión de los **Profesores Wülstein de Würzbug,** Alemania, i **Zolsner de Friedburg,** Alemania, han marcado una nueva ruta de progreso en la Otología, con sus nuevas modalidades de tratamiento quirúrgico de la otoesclerosis, por medio de la movilización directa, así como los nuevos procedimientos para la cura radical de las otorreas crónicas con la conservación de la función audiva a que bajo el título de timpanoplastias, a mediante la llamada microcirugía del oido están revolucionando lacirugía otológica en todo el mundo, con tendencia quizá al nacimiento de una nueva especialidad dentro de la otorrinolaringología, como es la otología.

Así mismo tuvo destacada actuación en los cursos dictados, el **Dr. Fernandez Vila,** con las demostraciones ue efectuó de los injertos a doble cara en las timpanoplastias.

Dr. Enrique Ortega Moreira es el profesor de otorrinolaringología en la Universidad de Guayaquil, jefe de los servicios otorrinolaringológicos del Hospital General, cirujano-especialista de la Clínica Julian Coronel *y miembro del Colegio Internacional de Cirujanos.*

No obstante los pocos días que duró el curso se hizo una completa revisión de toda la otológía desde el capítulo de embriología, fisiología fisica acústica, audiometría, luego la patología: otoesclerosis vértigo de Meniere, acúfenos, etc., para luego terminar en las técnicas quirúrgicas en especial la cirugía de la otoesclerosis con la movilización directa del estribo i las timpanoplastias.

Terminado el curso se repartió los diplomas respectivos a los que habíamos tomado parte en él, i entre ellos figurábamos colegas de America latina: Perú, Venezuela i Ecuador así como Europeos de Italia i Portugal a parte de numerosos Españoles.

La impresión general de todos cursillistas fué de profunda satisfacción, al haber aprendido las nuevas modalidades de la otología i la oportunidad de poder mejor desempeñarnos en la Cátedra, en los servicios hospitalarios a nuestro cargo, i en general a un mejor desempeño en nuestra vocación de ayuda a la humanidad doliente.

Aprovechamos nuestra permanencia en Europa, visitando luego el servicio de Prof. Wülstein en Würzburg, Alemania, personalidad mundialmente reconocida en los congresos internacionales de Amsterdam en 1953 i Washington, 1958. En su servicio hospitalario tuve oportunida-d de verlo practicar numerosas intervenciones tanto a el como a sus colaboradores, i en las que se destacaba su gran habilidad i dominio de la técnica quirúrgica i lo ingenioso de sus concepciones.

De desear sería que así como en España todos los años se dictan estos cursos a los que asisten numerosos especialistas de todo el mundo, así mismo las escuelas Norteamericanas debieran empeñarse por reunir a los médicos especialmente de latinoamerica i que por estar más cerca de éllos nos sería más facil acudir a Norteamerica, pero que al igual del curso dictado en España, fuera así mismo de corta duración i que en forma exhaustiva, nos dieran periódicamente una oportunidad para remozar nuestros conocimientos que redundaría en gran beneficio para la medicina de Latinoamerica, al par que estrechar los lazos de fraternidad i mutua cooperación entre los medicos de las Américas.

Enrique Ortega Moreira

JAPAN

Annual Congress Coincides With Visit of International College of Surgeons Around-the-World Tour

The Sixth Annual Congress of the Japan Section of the International College of Surgeons was held on Monday, October 19, 1959, in the Gakushikaikan Building in Kanda, Tokyo.

Because of the presence of American Fellows of the College traveling with the International College of Surgeons Around-the-World Clinic Tour, the scientific program had a bi-national character that, together with the caliber of the presentations, made it a memorable event.

PROGRAM

Opening Addresses

Hiroshige Shiota, M.D., F.I.C.S.; President, Japan Section; President of Nippon Medical College, Tokyo, Japan

Masao Tsuzuki, M.D., F.I.C.S.; Vice President, Japan Section; Hon. Professor, Tokyo University; Director of the Central Hospital, the Japanese Red Cross Association, Tokyo, Japan

Some Characteristic Findings on Japanese Women with Breast Cancer from the Endo-

Scientific Session of Sixth Annual Congress of Japan Section

crinological Points of View

Masao Fujimori, M.D., F.I.C.S., Department of Surgery, Tokyo University, Tokyo, Japan

A New Method of Stomach Operation

Shoen Cho, M.D., F.I.C.S.; Yokohama University School of Medicine, Yokohama; Cho Surgical Clinic, Tsuruoka City, Yamagata Pref., Japan

On Our Experiments with Radiation Treatment Mainly for Serious Tumors

Kouichi Kato, M.D., F.I.C.S., 1st Surgical Department, Nagoya University, Nagoya, Japan

Evaluation of the Noble Plication Operation for Prophylaxis Against Intestinal Obstruction Due to Adhesion

Shuhei Takita, M.D., F.I.C.S., 1st Surgical Department, Tokushima University, Tokushima, Japan

The Effectiveness of By-pass Operation for Incurable Cancer of the Alimentary Tract

Tetsuro Sakai, M.D., F.I.C.S., Professor of Surgery, Niigata University, Niigata, Japan

Radical Operation Combined with Anti-tumor Drug Administration for Gastric Cancer (Motion Picture)

Dennosuke Jinnai, M.D., F.I.C.S., Professor of Surgery, Okayama University, Okayama, Japan

Gall Bladder Disease—Especially the Problem of Common Duct Stone

Ralph R. Coffey, M.D., F.I.C.S., Kansas City, Missouri, U.S.A.

Orthopedic Problem of the Spine of the Geriatric Patient

Eugene L. Jewett, M.D., F.I.C.S.
Ruth Jewett, M.D., F.I.C.S.
Orlando, Florida, U.S.A.

The Prevention of Non-Union in the Treatment of Fractures

Edward L. Compere, M.D., F.I.C.S., President of U.S. Section, I.C.S., Chicago, Illinois, U.S.A.

Some New Developments in Rehabilitation of Severely Paralyzed People (Motion Picture)

Closing Addresses

HIROSHIGE SHIOTA, M.D., F.I.C.S,. President, Japan Section

MASAO TSUZUKI, M.D., F.I.C.S., Vice-President, Japan Section

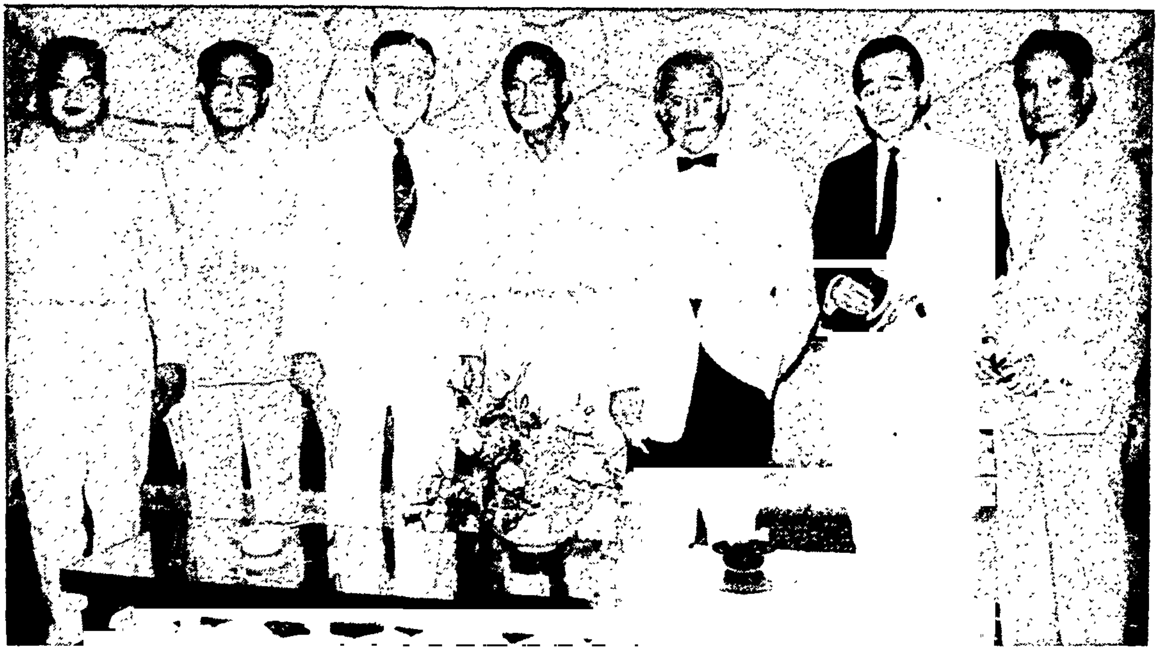
On the previous day, Prof. Dr. Komei Nakayama, secretary of the Japan Section, gave a demonstration of surgical procedures at Chiba University, Chiba. These included:

DIAGNOSIS	OPERATION METHOD
Carcinoma of the stomach	Gastrectomy and removal of the omentum
Carcinoma of the cardiac portion of the stomach with gastric polyp	Total gastrectomy, esophago-jejunostomy (Billroth II type) with Braun's anastomosis
Carcinoma of the cardiac portion of the stomach	Total gastrectomy combined with splenectomy and resection of the left lobe of the liver, esophago-jejunostomy (transplantation of the jejunum)
Carcinoma of the mid-thoracic esophagus	Esophagectomy through the right chest, esophagostomy at the left neck (two-stage operation for carcinoma of the mid-thoracic esophagus)
Carcinoma of the cardiac portion of the stomach	Total gastrectomy combined with resection of the tail of the pancreas and splenectomy, esophago-jejunostomy (Billroth II type) and Braun's anastomosis
Carcinoma of the mid-thoracic esophagus	Removal of the lymphnodes around the cardiac portion and the coeliac axis, ligation of the left gastric and the short gastric arteries and gastrostomy (1st stage operation for carcinoma of the mid-thoracic esophagus)
Carcinoma of the stomach	Gastrectomy and removal of the omentum

Prof. Komei Nakayama's Surgical Demonstration

THE PHILIPPINES

Philippine Section Holds Meeting and Reception for Dr. Simon



Officers of the Philippine Section with Dr. Simon (third from the right)

The Philippine Section of the International College of Surgeons held a special meeting and a reception in honor of the visit of **Dr. Max M. Simon**, of Poughkeepsie, New York, a member of the International Board of Governors of the College. The scientific meeting was excellent.

Both Dr. Simon and his family, which accompanied him, are most appreciative of the courtesy and hospitality extended to them by the officers and members of the Philippine Section. Dr. Simon greatly treasures the above photograph as a memento of a very rewarding experience.

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SPAIN

Prof. Fernando Martorell to Conduct Course in Angiology

Prof. Fernando Martorell, F.I.C.S., of the Instituto Policlínico in Barcelona, will conduct a course in angiology February 1-15, 1960.

The course will deal with:

Arteriosclerosis obliterans
Thromboangiitis obliterans
Aneurysms and arteriovenous fistulas
Thrombophlebitis and pulmonary embolism
Chronic venous insufficiency
Varicose veins
Lymphedema
Arterial Hypertension

The course will include presentation of patients, operations and discussion of the results of treatment.

SWITZERLAND

Prof. H. Willenegger Lecturing Abroad

Prof. H. Willenegger

Dr. H. Willenegger, professor of surgery at the University of Basel and president-elect of the Swiss Section of the International College of Surgeons, has been delivering, in response to warm invitations, an imposing number of lectures not only in Switzerland but in Portugal, Austria, Germany, Belgium and other countries of Europe. A brilliant surgeon, he has also devoted himself to research and has directed a number of important investigations.

Dr. Willenegger was born in Zurich on January 6, 1910. He pursued his medical studies in Bern, graduating in 1935, and had a surgical internship in a general hospital. For a year he was assistant at the Pathological-Anatomical Institute of the University of Zurich. He then served four years as surgeon (1938-1942) and six years (1942-1948) as chief surgeon at the *Kantonsspital Winterthur.*

In 1948 he accepted a post as chief surgeon at the University Hospital of Basel under the directorship of Prof. O. Schürch. For a year and a half after the death of Prof. Schürch he served as interim director, and upon the election of Prof. Nissen to that post he continued as chief surgeon for a year.

In 1949 he joined the medical faculty of the University of Basel, and in 1958 was elected full professor of surgery.

His published works and his lectures are concerned in the main with blood and plasma transfusion, the field of blood substitute solutions, general surgery, gastric and gall-bladder surgery, local chemotherapy, the surgical treatment of tuberculosis and the operative treatment of fractures. In the field of blood transfusion his work on the universal donor is very important, particularly the clinical and experimental proof and the elucidation of the intravascular agglutination caused by the isoantibodies contained in type O blood.

International House of Delegates to Convene

The Biennial Meeting of the House of Delegates of the International College of Surgeons will be held in Rome, Italy, on Saturday, May 14, 1960, at 3 p.m., the day preceding the opening of the Rome Congress. The meeting will be held in the large ballroom called the Winter Garden of the Hotel Excelsior.

In Memoriam

EDMOND JEAN CHARLES VELTER

M.D., F.I.C.S. (Hon.)

1884-1959

Edmond Jean Charles Velter
M.D., F.I.C.S. (Hon.)

The recent death of Dr. Edmond Velter, F.I.C.S. (Hon.), of Paris is a great loss to the world of ophthalmology and to the International College of Surgeons. It is felt very keenly indeed by the French Section of the College, for Dr. Velter was among its most eminent Fellows, one of the first surgeons of France to become associated with it, serving the Section for some years as a vice-president and as such representing it at international congresses.

Dr. Velter was born in Paris on October 17, 1884. He was educated at the Lycée Buffon in Paris and at the Academy of Paris; the latter conferred on him a bachelor's degree in classical studies. He then enrolled in the Faculty of Medicine of Paris, graduating in 1908. He interned in the Hospitals of Paris and continued postgraduate studies in ophthalmology at the Medical Faculty. He received his doctorate in 1912.

In 1923 he passed the competitive examination for professorial status on the faculty of the Ophthalmological Clinic of the Faculty of Medicine of Paris, and in 1933 was named full professor. He served as chief ophthalmologist at the Hospitals of Paris—St. Antoine's, Children's and the Hôtel Dieu—and was the principal organizer and president of the national commission for the certification of ophthalmologists.

Dr. Velter was a member of the Paris Ophthalmological Society, the French Society of Ophthalmology, the French Society of Neurology and the Society of Oto-Neuro-Ophthalmology of Paris.

He was an honorary member of the French Society of Neurosurgery, and of the Argentine and the Chilean Societies of Ophthalmology, as well as of the Pan American Association of Ophthalmology. He had an honorary doctorate from the University of Buenos Aires. He was a member of the International Council of Ophthalmology (1948-1955), a delegate to the Section of Natural Sciences and Medicine of UNESCO, a member of the constitutive commission of the co-ordinating committee of the International Congress of the Medical Sciences, a member of an advisory committee on cultural relations to the Ministry of Foreign Affairs and a member of the upper council of health in the Ministry of Over-Seas France.

Dr. Velter's contribution to the literature was both voluminous and authoritative. His treatise on therapeutic ophthalmologic surgery is a classic.

In addition to the many scientific honors conferred upon him, he was the recipient of the decoration as an officer of the Legion of Honor of the Republic of France.

The officers and members of the Board of Governors of the International College of Surgeons wish to express their sympathy to Dr. Velter's family and to all who were associated with him.

Raymond Darget
SECRETARY, FRENCH SECTION

In Memoriam

JOSEPH JAMES TOLAND, JR.

M.D., F.A.C.S., F.I.C.S.

1887-1959

Dr. Joseph James Toland, Jr., F.A.C.S., F.I.C.S., of Philadelphia, Pennsylvania, died on October 19, 1959.

Dr. Toland had the distinction of being named, in 1958, national "Catholic Doctor of the Year."

He was a native Philadelphian and a graduate of the Philadelphia Central High School. He received his M.D. degree in 1912 from the Medico Chirurgical College of Philadelphia, and served an internship at the Frankfort Hospital, also in Philadelphia.

He was chief of staff at St. Mary's Hospital, 1921-1941, and at National Stomach Hospital, Philadelphia, 1935-1940. He was medical director and chief of surgery at Northeastern Hospital, medical director and chief of surgery at Nazareth Hospital and chief surgeon at the Pennsylvania State Hospital at Byberry.

During World War II he served in the medical corps of the United States Navy with the rank of lieutenant commander.

He was chairman of the committee on legislation of the Philadelphia County Medical Society, a past president of the Federation of Catholic Physicians Guilds, president of the Medical Guild of Saint Rene Goupil and a member of the *Gesellschaft der Aertzte* of Vienna, Austria.

Dr. Toland wrote a number of articles dealing with general surgery and with industrial hazards and their prevention.

Joseph James Toland, Jr.
M.D., F.A.C.S., F.I.C.S.

In 1958, in addition to being named national "Catholic Doctor of the Year," he received the first award of merit of the Medical Alumni Association of Medico-Chirurgical College. In April of 1959 the LaSalle College Alumni Association presented him with its nineteenth annual *Signum Fidel* Award.

The officers and the members of the Board of Governors extend to Mrs. Toland and to the family their very sincere sympathy.

In Memoriam

CARL ROSENBERGER

M.D., F.I.C.S.

1892-1959

Carl Rosenberger
M.D., F.I.C.S.

Dr. Carl Rosenberger, F.I.C.S., of Jerusalem, Israel, died recently at the very peak of his proficiency.

He was born in Berlin, Germany, on March 1, 1892, and was graduated from the Friedrich Wilhelm University with the degree of M.D. in 1916.

For two years he served as assistant under Prof. Karewsky at the surgical clinic of the Jewish Community Hospital of Berlin. He received his training as gynecologist and obstetrician from Prof. Sachs at the hospital in Berlin-Lankwits. From 1924 to 1936 he was in private practice in Berlin and met with great success. He had his own clinic. His works were published by the leading journals of obstetrics and gynecology.

In 1936 he left Germany for Israel. In 1945 he became head of the department of gynecology and obstetrics at the Bikur Cholim Hospital in Jerusalem. Only recently, under his direction, the department was greatly enlarged.

The esteem in which he was held in his specialty found its expression in the fact that for several years he was repeatedly elected chairman of the Gynecologists' Society of Jerusalem.

Dr. Rosenberger was a man of outstanding character, straightforward and modest. He was adored by his patients, to whom, without ever considering his personal interests, he devoted himself day and night. He served his patients until his last day. Almost at the end of his own life, when he himself was no longer well, he was summoned, at night, to the bedside of a critically ill patient and through his skilful ministration saved her, who knows at what cost to himself.

Dr. Rosenberger planned this year to take leave from his gruelling work and go abroad on a clinical tour. But fate willed otherwise.

Not many are chosen to be real doctors in the full meaning of the word: to help the sick not only through skill but also, and perhaps foremost, through warm-hearted personal interest. Dr. Carl Rosenberger was just such a doctor.

He lived a full life, rich in work and success, rich in the happiness of his family life.

To his family we extend our most sincere sympathy. And we mourn in his death the fine man, the loyal colleague and the beloved doctor. His life can well serve as an example to our young generation.

Bernhardt Zondeck
F.I.C.S. (Hon.)
Jerusalem, Israel

In Memoriam

EUGENE CONSTANTINE DE SAVITSCH

M.D., F.I.C.S.

1903-1959

Dr. Eugene Constantine de Savitsch, F.I.C.S., formerly of Washington, D.C., and recently of London, England, died on October 15, 1959.

Dr. de Savitsch was born in Petrograd (Leningrad), Russia, on August 19, 1903. He was educated at the Imperial Gymnasium of Nicholas in Tsarskoe Selo, Russia.

He had his formal academic training at the University of Denver in Colorado, graduating with a B.A. degree in 1932, and his medical education at the University of Chicago, where in 1933 he was elected to Sigma Xi. He served his internship at the University of Chicago Clinics, and continued his postgraduate studies at the Pasteur Institute in Paris, the Institute Bunge in Antwerp, and the Laennec Hospital in France.

While living in Washington, Dr. de Savitsch taught at Georgetown University School of Medicine, and was associated with the Georgetown University Hospital, Glendale Sanatorium, and Doctors', Emergency and Garfield Hospitals. He also served as surgeon in the U.S. Public Health Service.

He was a Fellow of the American College of Chest Physicians, and a member of the following: the American Society for Experimental Pathology, the Society for Experimental Biology and Medicine, the Trudeau Society and the American Association for the Advancement of Science.

During World War II, for reasons of health, Dr. de Savitsch was not accepted for military service and served in SOS.

He wrote extensively and was published by leading scientific journals in the United States and Europe. In 1940, his autobiography, *In Search of Complications*, dealing in part with international aspects of surgery and pathology, was published in the United States and translated into a number of European languages.

Eugene Constantine de Savitsch
M.D., F.I.C.S.

In 1955, Dr. de Savitsch went to Switzerland to see a patient. There he suffered a heart attack. He never recovered sufficiently to resume his surgical practice. He moved to England and occupied himself with writing. He revised and expanded his autobiography, a new edition of which was issued in 1958. At the time of his death he was in the process of writing a life of Paul I of Russia, for he was quite conversant with Russian history and was an expert on Russian ecclesiastical art.

The officers and members of the Board of Governors of the International College of Surgeons extend to Mrs. de Savitsch their very sincere sympathy.

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GENÈVE 35
COLLÈGE INTERNATIONAL DE CHIRURGIENS

FOUNDED BY DR. MAX THOREK

Twelfth Biennial International Congress

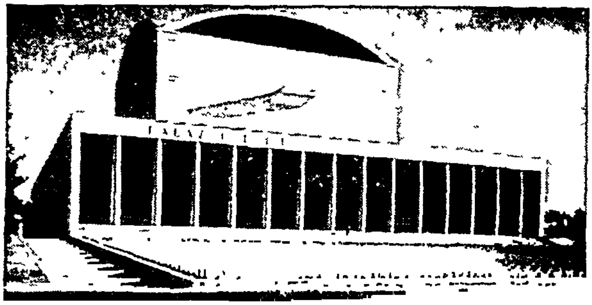
of the International College of Surgeons

Under the Auspices of His Excellency

the President of the Republic of Italy

CONGRESS PRESIDENT
PROF. DR. PIETRO VALDONI

ROME, ITALY **MAY 15-18, 1960**



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Ten Thousand Sq. Feet for *Technical Exhibits,* housed in the same Place of Meetings where papers will be presented—Space available for display of pharmaceutical products, hospital equipment, surgical apparatus and instruments—*Scientific Space* on the first floor of the Reception Hall.

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In Grateful Memory of

Max Thorek

M.D., Sc.D., LL.D., F.B.C.S., F.I.C.S., F.P.C.S. (Hon.), F.R.S.M.

Beloved Founder of the International College of Surgeons, the International Surgeons' Hall of Fame and the School of the History of Surgery and Allied Sciences of the International College

Editor-in-Chief of the Journal of the International College of Surgeons

Artist, author, humanitarian, teacher, world-renowned surgeon and exponent of the universality of scientific knowledge.

He hath outsoared the shadow of our night.
Envy and calumny and hate and pain
And that unrest which men miscall delight
Can touch him not and trouble not again.
From the contagion of the world's slow stain
He is secure, and now can never mourn
A heart grown cold, a head grown grey in vain;
Nor, when the spirit's self has ceased to burn,
With sparkless ashes load an unlamented urn.

Shelley

1889 1960

DR. MAX THOREK

FOUNDER and INTERNATIONAL SECRETARY GENERAL
INTERNATIONAL COLLEGE OF SURGEONS

FOUNDED BY DR. MAX THOREK

The Journal of the International College of Surgeons

FOUNDED IN GENEVA, SWITZERLAND, 1935 - INCORPORATED IN WASHINGTON, D. C., 1940

Vol. 33 FEBRUARY, 1960 No. 2

Once in a Lifetime: Hail and Farewell to a Titan

At long, long intervals in this suffering world there appears a human being who defies comparison, not only with all other human beings but with anything known to man save a cosmic force—a man whose creative genius does not burn but strikes, like lightning; whose lust for life is no less than his titanic capacity for living; before whose energy stone walls melt like snow; who calls no man stranger, *having known all men from birth*; who describes a meteor's arc by his mere passing, so that men start awake and look up and marvel. At still longer intervals, as though all this were not sufficiently startling, such a man appears with a heart so full of human understanding and hands so full of help that he needs must sow them abroad like seed in springtime, lest by the excess of their weight they hamper him in his ceaseless quest for—what? Not wealth, fame, comfort or happiness; all these may be easily within his grasp, but they cannot stay him.

It goes without saying that such a man cannot rest. With all his powers, the power to rest is not in him. What, rest? when there is sickness here, famine there, war and hatred and ignorance and malice devouring their thousands? Perish the thought. Life is short enough at its longest, with all there is to do.

To have known one such spirit in one *lifetime is to have been given much,* for such a man is more than a man; he is an experience. And such a man, as those are aware who were so fortunate as to be counted among his friends, was Dr. Max Thorek.

How strange it is to write "was" of Dr. Max. It is like turning down a part of the light of the world; like approaching a many-windowed house within whose walls one has again and again known warmth and light and hospitality and comradeship, and having its walls dissolve before one's eyes. The whole surrounding landscape is dimmed and dulled, strange to the eye and impalpable to the touch; and, despite the fact that we know Dr. Max will live on in thousands of the lives he enriched by living at all, it is hard to think that we shall not see him again.

All hearts are heavy that loved him, and their name is Legion. Many of us he has drawn with strong, skilled hands through the Valley of Death, and brought forth triumphant on the other side. Many another will feel again and again, with a longing wrench of the heart, the warmth of his handclasp, and hear his loved voice speak the words he spoke most often: "God bless you and keep you, my friend."

For the word "friend" meant exactly that to Dr. Max. He was a friend whose friendship, once won, was given freely, fully, ungrudgingly and with overwhelming appreciation and gratitude. He could not say enough or do enough for those who truly shared his labors of love. His confidence, like that of anyone whose trust is worth having, had to be earned, but once earned it was as secure as the Rock of Gibraltar. He was a great, even an inspired surgeon, yet for those to whom he revealed his attitude toward surgery the word "humility" took on new meaning. He was so versatile in his interests, so many-faceted in his personality, so vividly original in conversation and of such inexhaustible vitality and vivacity of mind that to all who loved him—his family, his friends, his colleagues, the far-flung brotherhood of the College he founded. and the staff members who worked with him in College and hospital—every thought of him will be forever compounded of laughter and tears, tenderness and surprise, humility and aspiration, courage and compassion, now weighted in this direction, now in that, but always with an undertone of nostalgia and regret, for we know too well that "we shall not look upon his like again."

Dr. Max had high standards, and he would not lower them or see them lowered; it was a perpetual challenge to be his friend, his co-worker, or his ally in any enterprise. He demanded much, but he gave much in return. He exacted the last full measure of loyal endeavor, but he never asked more of anyone than of himself.

Few men can say as much, and none can say more. God bless you and keep you always, dear Dr. Max.

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But there are deeds which should not pass away,
And names that must not wither, though the earth
Forgets her empires with a just decay.
The enslavers and the enslaved, their death and birth.
The high, the mountain-majesty of worth
Should be, and will. survivor of its woe,
And from its immortality look forth
In the Sun's face, like yonder Alpine snow.
Imperishably pure beyond all things below.

—*Byron*

General Surgery

Situs Inversus

Review of the Literature, Report of Four Cases and Analysis of the Clinical Implications

NICHOLAS R. VARANO, M.D.* AND ROBERT J. MERKLIN, PH.D.**
PHILADELPHIA, PENNSYLVANIA

ALTHOUGH rare (1:5,000 to 1:10,000), situs inversus is nevertheless an important clinical condition—a condition the physician and surgeon must be alert to recognize, since a number of important malformations and diseases have a higher than normal rate of occurrence in the person with situs inversus. More important is the fact that many of these conditions must be surgically corrected; some very early in life, as for example, pyloric stenosis or cardiac and great vessel malformations, while others, such as bronchiectasis or malformations of the lower vertebrae, may not require attention until later in life.

The predilection of persons with situs inversus to certain diseases was noted by Kartagener in 1933. He recognized the fact that the syndrome of hypertrophic rhinitis, nasal polyposis, sinusitis and bronchiectasis occurred more frequently in such persons than in the normal population. Since this recognition Torgersen (1927) has shown bronchiectasis and nasal polyps to occur in as high as 10 per cent of persons with situs inversus. Later (1949) he observed bronchiectasis alone in 25 per cent of these persons. Cardiovascular malformations occur in approximately 8 per cent (Schmutzer and Linde, 1958)

Situs inversus as observed at autopsy in 4 cases is described, with the associated defects, anomalies and pathologic changes. The literature is reviewed, and various theories concerning the etiologic factors are discussed. The authors point out the omission, in many published reports, of pertinent data concerning age, sex and the multiple congenital defects that frequently accompany the condition, stressing the need for adequate surveys and accurate classification. In particular, roentgen studies of the chest should include a search for possible dextrocardia. Early recognition of situs inversus, partial or complete, is highly desirable and would greatly assist in the solution of the many problems involved.

From the Daniel Baugh Institute of Anatomy, Jefferson Medical College, Philadelphia.

*Assistant Professor of Urology.

**Assistant Professor of Anatomy.

Submitted for publication Aug. 19, 1959.

and the incidence of agenesis of the spleen, diaphragmatic defects, spinal anomalies and other defects, although apparently higher than in the normal population, cannot be estimated with any degree of accuracy.

The transposition of viscera may be complete, with the heart, lungs and all abdominal viscera reversed, or incomplete, manifesting itself as a simple reversal of the stomach or liver (ectopia). Between these extremes will be situs inversus without dextrocardia, so-called devocardia, dextrocardia without situs inversus, transposition of the great vessels, the lungs or the liver, transposition of the stomach and the first part of the duodenum or transposition of the colon. Heterotaxia, situs transversus, reversed asymmetry and lateral transposition are synonymous terms that may be encountered in the literature.

The incidence of situs inversus in the general population is difficult to determine or predict. A number of comprehensive studies, however, have revealed some interesting facts about patterns of inheritance and associated pathologic conditions in those so affected.

Mayo and Rice (1949) reported 76 cases of situs inversus viscerum totalis in 1,551,047 patients who registered at the Mayo clinic from 1910 to 1947, an incidence of 1:20,000. They emphasized the fact that other anomalies that are incompatible with life may be associated with situs inversus and that the incidence is undoubtedly much higher. It should be pointed out, too, that in a hospital population the element of selection must also be considered. Torgersen (1946 and 1949), in a roentgenographic survey of 1:500,000 Norwegians, noted 195 cases of situs inversus, approximately 1:8,000. In another mass radiographic survey, Gould (1945) recorded 40 cases of situs inversus in 442,252 subjects, an incidence of 1:11,000. Adams and Churchill (1937) reported 23 cases in which the condition was diagnosed at Massachusetts General Hospital in 232,112 admissions, and Caplan (1946) reported 12 cases in some 100,000 examinations for enlistment in the Navy, an incidence of 1:8,400. Other authors have reported higher and lower incidences of situs inversus, but many have failed to specify whether the situs inversus was complete or partial. A survey of the literature by Johnson (1949) is interesting in this respect, because it indicates the relative frequency of the varieties of situs inversus. Reviewing the literature from 1925 to 1946, Johnson found 515 cases of dextrocardia, with no indication in the report whether situs inversus was or was not present. There were 379 cases of situs inversus viscerum totalis, 128 cases of isolated dextrocardia, 41 cases of partial situs inversus, 46 cases in which only the colon was involved, 20 cases in which only the great vessels of the heart were affected, 6 cases in which the stomach alone was involved and 2 cases of transposition of the liver. Considering all these data, an incidence of 1:8,000 seems to be a realistic figure for situs inversus viscerum totalis as observed in hospital admissions. It should be borne in mind that the incidence of all types of transposition is undoubtedly higher, and that many cases will be missed when (1) defects incompatible with life exist or (2) the subject is completely healthy and never requires the type of medical examination that would reveal the condition.

It is readily apparent that visceral reversal is part of a much larger basic problem, namely, the manner in which bilateral symmetry and asymmetry are established normally in any animal. In addition, the problem of twinning is intimately associated with the occurrence of situs inversus. There have been numerous studies of both vertebrate and invertebrate forms in which induced or spontaneous twinning has resulted in situs inversus in one of the twins (Hamburger, 1942; Gates, 1946). A study of these important problems and the analysis of conditions associated with situs inversus has given rise to a number of hypotheses concerning genetic constitution and the mechanisms by which inversion can be accomplished. Cockayne (1938) stated that complete transposition of the viscera agrees with what is expected of a rare recessive character in its familial incidence and gene distribution within a family; in its occurrence in both members of a pair of monozygotic twins whose parents are normal; in the high percentage of first cousin marriages that give rise to it, and, so far as can be determined, in the ratio of affected to normal children in sibships. His analysis revealed that other developmental abnormalities, such as congenital heart disease, are more common in persons with transposition than among the general population and that this liability to defective development is much greater with partial than with total transposition. Cockayne concluded that complete transposition is inherited as a recessive character determined by a single autosomal gene, and in his opinion partial transposition is probably determined by the same gene, the higher incidence of associated anomalies requiring the classification of this gene with the partially lethal group. Cockayne's theory has received support from several studies of laboratory animals as well as from clinical studies. It is noteworthy that in mice, when genetic constitution can be critically tested, studies have shown that this condition can be inherited as an autosomal recessive character with incomplete penetration. Tihen, Charles and Sipple (1948) reported such an inheritance in a strain of mice in which the viscera and blood vessels were reversed. In addition, these mice had abnormalities of the spleen and lungs and malposition of the postcaval and hepatic portal veins. The mortality rate among these mice was high, with many cases of what appeared to be hydrocephalus. Hummel and Chapman (1959), at the Jackson Memorial laboratories, have produced a strain of mice with situs inversus which reveal the same type of inheritance. These animals have abnormalities of the blood vessels, spleen, liver and lungs but are healthy and fairly good breeders. Five hundred and seven mice born to parents with transposed viscera were examined by these workers. They observed that 29.6 per cent had complete reversal without abnormalities and 41.8 per cent had partial reversal, coupled in most cases (81 per cent) with anomalies of the blood vessels—a total of 71 per cent with situs inversus. The lung lobation was abnormal in 20 per cent and the shape or position of the spleen in 29 per cent. The association of these anomalies with partial situs inversus rather than complete reversal is extremely interesting, since it agrees with Cockayne's observation of the human species.

Torgersen (1949), on the other hand, came to different conclusions with regard to the genetic aspect of reversed asymmetry. On the basis of a thorough analysis of the varied theories as to the causes of situs inversus, its relation to disease and its familial incidence, he presented the following interesting points:

1. The frequency of situs inversus in Norway, a small and geographically limited population, is somewhat above 0.01 per cent (1:10,000).
2. The frequency of situs inversus is not much higher in monozygotic twins than in the general population. There is some evidence, however, of a correlation between twinning and situs inversus in a few cases, particularly when there are many twins in the paternal lineage.
3. The ratio of affected to normal persons does not accord with the supposition that a single recessive gene is generally the cause of situs inversus. Instead, Torgersen postulates from the morphologic

and genetic points of view that the asymmetry of the viscera, whether normal or reversed, is due to a complex of genes that may be broken up into components of particular importance for particular organs. The reversal syndrome behaves as a dominant, with varying expression and chance of inversion in heterozygotes and homozygotes, the complete reversal of asymmetry depending on the integrative action of the complex of genes. In a later paper (1950), Torgersen refuted the theory that twinning and reversal of asymmetry are closely related phenomena; among the parents and siblings of 100 unselected patients with situs inversus, twinning (and also left-handedness) was not observed with any greater frequency than might be expected on the basis of chance alone. He also stated that the developmental potentialities for bilateral differentiation of the human egg are so strongly determined genetically that the mirror-image mechanism, as revealed in experimentally produced amphibian twins, has relatively little importance in human polyembryology. The latter is a reference to the work of Stockard (1921), Spemann and Ruud (1922), Komai (1938) and Lutz and his associates (1957), among others, who have investigated the effects of temperature, chemicals and general delay of gastrulation of the twinning and monster formation in certain fishes and amphibia.

In general these workers have shown that in some, but not all, cases of complete and incomplete twinning the asymmetry of one twin will be reversed (a mirror image). Torgersen may have underestimated the occurrence of the phenomenon in human development. Its importance as a mechanism of situs inversus is also strongly suggested by the reports of Newman (1940), Aird (1954) and others that situs inversus frequently appears in laterally conjoined human twins, the right-hand member being the one affected, an apparent mirror-image effect. Also, the fact that twinning can be initiated at different stages of development and with different end results has been shown by the study of Keeler (1929). He compared the amount of mirror-imaging in 10 sets of human double monsters and 14 sets of identical twins. Only 22 per cent showed mirror-imaging in monozygotic twins, as compared with 77 per cent in laterally conjoined twins. Some further evidence of the complexity of factors in the occurrence of situs inversus is the fact that it has been observed 12 times in monozygotic twins, but in 6 of these sets it occurred in both members and in 6 cases in only 1 of the members (Torgersen, 1949). Lowe and McKeown (1954) described a pair of male twins, one with situs inversus and the other normal. Adding to the perplexity from a genetic standpoint are the facts that both were right-handed and had clockwise crown whorls, and that in both the right scrotal half was higher. Situs inversus has also been observed in both members of sets of dizygotic twins (Torgersen, 1948a).

From this welter of conflicting and fragmentary evidence several suppositions seem justified with regard to situs inversus in man:

1. A single autosomal recessive gene with incomplete penetration is responsible for situs inversus in many cases.
2. This gene is partially lethal, producing visceral, vascular and other defects.
3. Twinning, which in itself is a complex problem, is also responsible in some cases of situs inversus. For example, situs inversus may result from developmental arrest, when fission takes place after bilateral symmetry has been established, with the production of monozygotic twins, one of which is the mirror image of the other. Either of these twins may die at an early stage and be resorbed.

The large number of cases of situs inversus reported in the literature is proof of a widespread and continuing interest in this anomaly. The condition has been observed in practically all races and nationalities of man and in association with numerous diseases and defects. The first report of situs inversus is credited to Aristotle, who described the condition in 2 animals. Since a historical review will not be attempted here, the reader is referred to the recent paper of Schmutzer and Linde (1958) for a brief historical account.

With the advent of roentgenography, there has been a steady increase in case reports. Cleveland, reviewing the literature in 1926, collected 400 cases and Johnson (1949) 632 cases of *situs inversus* in the literature from 1925 to 1946. The details of Johnson's review have been given earlier. In reviewing the literature since 1946, we have noted reports of 722 cases of situs inversus, including 124 cases of isolated dextrocardia. There have been 365 cases of situs inversus viscerum totalis, 159 cases of Kartagener's syndrome, 30 cases of levocardia, 24 cases of situs inversus with critical congenital defects, 17 cases of partial situs inversus, 2 cases of transposition of the stomach and 1 case of transposition of the liver. In addition, a new syndrome has been described by Polhemus and Schafer (1925); this consists of persistent atrioventricularis communis, partial situs inversus of the abdominal viscera, accessory lobes of the lung and congenital absence of the spleen. These authors described 4 cases observed in a two year period and reported 14 additional cases from the literature. Two additional cases have been reported recently (Goncerzewicz, 1957; Tersley, 1958), making a total of 20 cases of this syndrome in the literature. It seems safe to say that additional but rarer syndromes will be recognized in the future.

We have attempted, thus far, to present the classification, general and clinical occurrence and causation of situs inversus and to sketch briefly its relation to various defects and diseases. These points will l considered more fully and with clinic emphasis under *Comment.*

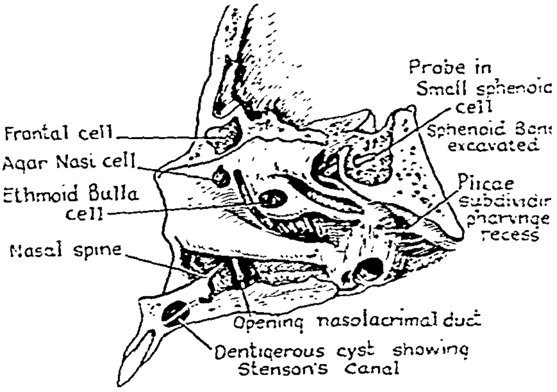

Fig. 1.—Lateral nasal wall in dissection in ca of situs inversus, showing small sphenoid sin large ethmoid bulla cell, large agger nasi c and dentigerous cyst with remains of Stenso canal.

OBSERVATIONS

Observation 1. Dissection of Cadaver Spe men.—The subject was a 45-year-old Neg who died of paresis. No other history w available.

The Head: Grossly considered, the skull w normal. The paranasal sinuses, however, r vealed several interesting features. The mo obvious was the small size of the spheno sinuses, which together measured only 5 m in diameter. The cell of the ethmoidal bul was greatly enlarged bilaterally, occupying large part of the ethmoidal field. Fusion the bullar wall with the middle concha both sides resulted in absence of the supr bullar furrows. The left frontal sinus w doubled, consisting of an anterior cell th pneumatized the frontal bone and a posteri cell largely supraorbital. On the left side large agger nasi cell opened, as usual, in the infundibulum. The infundibulum did n communicate with the frontal recess but end blindly. A total of five anterior and two p terior ethmoidal air cells were present on t left side.

The right frontal sinus was 6 mm. from t midline, owing to the encroachment of t enlarged left frontal sinus. The right ag nasi cell was considerably smaller than t left, and very large posterior ethmoidal ce were present. The maxillary sinuses were small; correspondingly, the canine fossae were shallow.

In the maxilla, 2 mm. above the roots of the medial incisors, was a dentigerous cyst measuring 10 by 8 mm. (Fig. 1). An opening in the floor of the nasal cavity led to a patent duct that passed through the center of the cyst. This duct seemed to be a remnant of the incisor canal, which rarely persists in the adult as an incisive duct, thus forming a communication between the nasal and oral cavities; the cyst arose from the proliferative activity of the duct epithelium. Each lateral nasal wall had four meatuses: the inferior, middle, superior and supreme, the middle being the widest. The nasolacrimal ducts were rather large and regular in their course and opened normally into the inferior meatus. In the nasopharynx, both pharyngeal recesses were subdivided into several smaller compartments by plicated strands of mucous membrane.

In their course and distribution the cranial blood vessels were within the range of normal variation. The cranial nerves were also normal. Noteworthy is the fact that the lingual nerve maintained a normal relation to the submaxillary duct. It lay first above, then lateral and finally below. Other aspects of the head were essentially normal.

The Neck: The thyroid gland consisted of two lobes joined by a small intermediate isthmus. The superior thyroid arteries arose as the first branches of the external carotid arteries. The inferior thyroid arteries arose from the thyrocervical trunks and formed an inverted U-shaped loop in their course to the inferior dorsal surface of the gland. Their relation to the inferior laryngeal nerves was normal, the terminal nerve fibers being dorsal to the arteries.

The Thorax: The heart and great vessels were characteristically transposed (Fig. 2). There was a sacculated aneurysm of the descending portion of the aortic arch that measured 6 by 3 cm. The walls of the aneurysm were lined with hard calcified arteriosclerotic plaques. The ligament of Botalli could not be identified, and no opening that would suggest a patent ductus arteriosus was observed. Except for their transposed position, the large veins of the heart were normal.

The heart was normal in size, measuring 12 cm. from base to apex and 9 cm. at its greatest width. Its transposition had produced no abnormalities, although a nonfunctioning probe patency of the fossa ovalis existed and the valve of the inferior vena cava and the coronary valve exhibited some degree of fibrous thickening.

The lungs were normal but transposed. The thoracic arterial blood supply was normal. The azygos system consisted of an azygos vein draining into the superior vena cava after arching over the left bronchus. The vessel collected blood from the eleven intercostal spaces of the left side of the thorax and the lower six interspaces of the right side. The five upper intercostal spaces of the right side drained directly into a vein, which in turn entered the right innominate vein.

The cisterna chyli of the thoracic duct was situated to the left of the abdominal aorta at the level of the second lumbar vertebra. After crossing through the aortic hiatus of the diaphragm, the thoracic duct immediately crossed to the right side and ascended first along the right side of the aorta and then in relation to the right side of the azygos vein. At the cervical level the thoracic duct left the right border of the esophagus, turned laterally and passed under the subclavian artery, to terminate in the first part of the right brachiocephalic vein.

A partial transposition of muscle fibers occurred in the diaphragm. The left crus was larger than the right, and the major openings, that is, the aortic, the vena caval and the esophageal, were transposed. The left leaflet of the central tendon was the largest, the right the smallest and the middle intermediate.

The Abdomen: The abdominal portion of the esophagus measured 3 cm. in length. The stomach was unusually large, measuring 20 cm. from the pyloric to the fundic border and lay, reversed in position, in the right hypochondrium and the epigastric areas. An extensive collateral circulation was established by the splenic, right gastric and right gastroepiploic arteries. The duodenum, although transposed, was normal in shape and curvature. It had a free superior portion and a fixed descending and transverse portion, and the pyloric sphincter appeared normal. The superior mesenteric artery was anterior to the uncinate process of the pancreas, showing that the mechanism of rotation of the head of the pancreas was comparable to the normal rotation. The root of the mesentery was transposed, running obliquely downward from right to left. The terminal portion of the ileum was fixed for a distance of 9 cm., and the cecum and appendix were fixed in a retroperitoneal position, the appendix being in a subhepatic position on the left side of the body (Fig. 3). The ascending, transverse and descending portions of the colon were transposed but otherwise normal in attachment. The sigmoid flexure had a short mesentery, and the rectum was disposed in its usual manner, although transposed. The great omentum was very large, measuring 20 cm. from the greater curvature of the stomach to the distal free border and 30 cm. in the transverse plane (Fig. 2), and enclosed an extensive omental bursa. The liver and pancreas were transposed but normal in size and shape. The bile tract measured 12 cm. in length. The hepatic trunk was 4 cm. long and received two branches from the left hepatic lobe and one from the right hepatic lobe. The cystic duct was 4 cm. long. The common bile duct was 7 cm. long and passed to the dorsal surface of the duodenum to join with the main pancreatic duct. An accessory pancreatic duct was present 2.5 cm. above and somewhat lateral to the main duct. The portal system was formed by the superior mesenteric vein and the splenic vein. Coronary veins entered the portal vein near the porta hepatis. The inferior mesenteric vein joined the superior mesenteric vein just distal to its union with the splenic vein. The spleen was on the right side. It was 7 cm. wide and 10.5 cm. long, having the general shape of an orange segment. The kidneys were normal in shape and size. The right kidney was higher than the left, and each kidney was supplied by two renal arteries. The right kidney was drained by one renal vein and the left by two. The ureter of each kidney coursed downward over the external iliac vessels and entered the bladder in normal fashion. The vas deferens crossed anterior to the ureter on both sides in each case, and the superior vesical arteries were anterior to the ureters. The urinary bladder was normal. The suprarenal glands were transposed, the right being semilunar and the left triangular. The left gland was encroached upon by three large lymph nodes of the superior mesenteric group. The celiac ganglions were normal and received the greater splanchnic nerves. The testes were normal, the right testis being slightly lower in the scrotum than was the left.

In general, the abdominal blood supply was within normal limits. Variations in supply to the duodenum and pancreas were interesting but not unusual. The inferior pancreaticoduodenal artery was unique. Normally the arteries to the small intestine arise from the right side of the superior mesenteric arteries while those to the large bowel arise from the left side. The inferior pancreatic duodenal artery in the normal person usually arises from the right side also. In this subject with situs inversus it arose from the right side of the superior mesenteric artery, crossing dorsal to it to reach the left side and anastomose with the superior pancreatic duodenal artery. This suggests that rotation of the intestine, in this

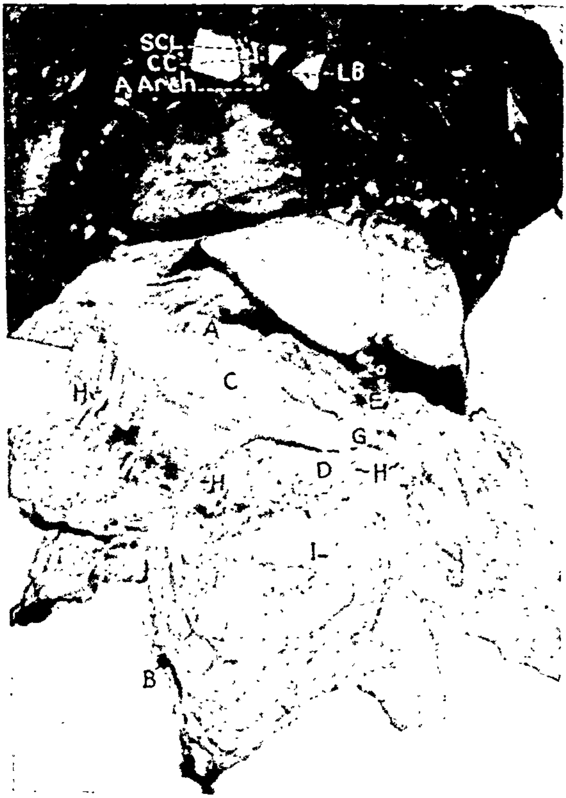

Fig. 2—Dissection to show transposition of heart and aortic arch to right side, liver to left and stomach to right. *A*, lesser omentum; *B*, great omentum; *C*, stomach; *D*, transverse colon; *E*, pylorus; *G*, transposed right gastroepiploic artery; *H*, anterior epiploic arteries, and *I*, transposed right epiploic artery. *SCL*, transposed left subclavian artery; *CC*, common carotid; *LB*, brachioecphalic artery.

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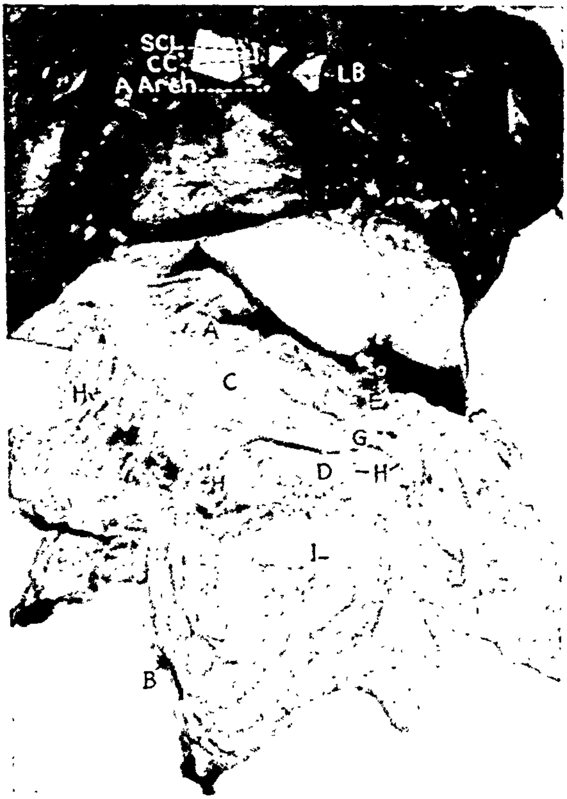

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subject, occurred proximal to the point of origin of the inferior pancreatic duodenal artery instead of distal to it.

The Back: The muscles of the back were normal in orientation, number, blood and nerve supply. Dissection of the spinal cord revealed no abnormality in the structure of the cord. The number and distribution of the spinal nerves were normal. Roentgen examination of the cervical, thoracic, lumbar and sacral areas of the vertebral column was carried out. Anteroposterior projections revealed no anomalies or supernumerary vertebrae.

Observations.—This includes 3 cases of situs inversus in newborn infants with malformations incompatible with life.

CASE 1.—In a Negro girl who lived fifty-eight minutes, the postmortem findings were as follows: Situs inversus viscerum totalis was present. Absence of the right side of the diaphragm was observed, with massive herniation of the stomach, spleen, right lobe of the liver and all of the small intestine and the ascending colon into the right hemithorax, with subsequent herniation of the spleen and stomach through the posterior mediastinum (between the descending aorta and the esophagus) into the left hemithorax, but without perforation of the mediastinal pleura. There was malrotation of the intestines. Hypoplasia of the lungs was present, with massive atelectasis. Cor biloculare with a rudimentary interatrial septum primum, a bifid aortic valve, a double superior vena cava and pelvic ectopy of the right kidney were present, as was uterus unicornis with complete absence of the upper part of the right mullerian system and attachment of the right gonad to the right inguinal ligament of the mesonephros.

CASE 2.—A Puerto Rican boy who died at the age of 16 days was examined postmortem. Situs inversus viscerum totalis was present, with tricuspid atresia and stenosis of the tricuspid valve. Stenosis of the pulmonary artery and a patent ductus arteriosus were noted. Interatrial and interventricular septal defects were present. There was focal pulmonary atelectasis, bilateral.

CASE 3.—A Negro girl whose age at death was 4 days revealed, at autopsy, partial situs inversus. The stomach, duodenum, liver, biliary system, spleen and pancreas were transposed. There was malrotation of the colon with the cecum and appendix on the right side; duodenal stenosis and duodenojejunal obstruction due to bands were observed. A urachal cyst was present, and there was bilateral focal pulmonary atelectasis. A gastrojejunostomy had been performed and evisceration had occurred ten days after the operation.

Family histories for these infants were unavailable. Two of them were born out of wedlock and the third to parents who were unable to supply sufficient information.

COMMENT

Unfortunately no information is available with regard to the state of health of the cadaver specimen prior to death. Apparently he did not suffer from Kartagener's syndrome; the lungs and paranasal sinuses appeared normal, although the sinuses exceeded normal limits in several respects. The heart and great vessels appeared normal, with the exception of the aortic aneurysm. This, however, was an aneurysm of the saccular type, which, according to Kampmeier (1946), is almost always of syphilitic origin. Our conclusion is that this subject had had no defect that could be associated with the transposition of viscera.

Turning to the newborn infants, we have 3 striking examples of the coupling of situs inversus with defects of such magnitude that survival is impossible or measured in days. The first subject was born prematurely, with consequent cerebral damage; so many defects were present, however, that death would undoubtedly have occurred anyway; the heart defects, great vessel defects, or the herniation and malrotation of the intestines—any one of these was sufficient to cause death within a few days. In the second case multiple cardiac and great vessel defects existed. Stenosis of the artery and tricuspid valve and the interatrial and interventricular defects were each serious enough to result in death. In the third case the thoracic viscera were in the normal positions, but the stomach, duodenum, liver, and pancreas were reversed, with malrotation of the colon. The major defect accompanying this partial inversion was duodenal stenosis requiring surgical intervention. Ten days after a gastrojejunostomy evisceration occurred, and with pulmonary and pericardial effusions and acute fibrinous peritonitis death resulted. The occurrence of this syndrome of critical congenital defects and situs inversus may be much higher than reports in the literature would indicate. At Jefferson Medical College Hospital the occurrence is 1:5,000; records are not complete, however, and there may have been additional cases among stillborn infants and those who died in the neonatal period that were not subjected to postmortem examination. Tanner-Cain and Crump (1951) have reported 3 cases of situs inversus with multiple congenital anomalies which are worth recounting. All 3 patients were Negro female infants. The first lived three days, and autopsy revealed levocardia accompanied by aortic compression, due to a displaced thymus; endocarditis; infarction of the heart and lungs; urethral atresia, and bilateral polycystic kidneys. The second infant lived fifteen days. Postmortem examination showed complete situs inversus, interatrial and interventricular septal defects with right-sided hypertrophy and dilation of the heart, bilateral atelectasis and anoxia. The third infant survived eleven months, and she too had complete situs inversus. Autopsy revealed chronic tracheobronchitis, atelectasis, a widely patent foramen ovale and bilateral hydronephrosis and hydroureters. The authors give no indication of occurrence; however, it is interesting to note that all three infants were Negro and female, particularly since in 2 of our own cases those facts also applied. Bauer (1947) has also reported 2 cases of this syndrome. The first infant had dextrocardia accompanied by hydrocephalus, cleft palate and a diaphragmatic hernia. The other had complete transposition with anencephalus, rachischisis, eventration of the viscera and clubfoot. Walls (1942) has reported a case in which only the heart and liver were reversed. The patient, a white female infant, died at the age of 6 months and was shown to have cor biloculare, with a markedly anomalous arrangement of the great veins. These cases are proof that any congenital defect is possible in conjunction with visceral transposition, two or more body systems commonly being affected. A number of other reports of this kind are included in the literature, but since they do not embody any symptoms not already mentioned we shall forego discussing them.

The frequent association of cardiovascular malformations with situs inversus presents important problems for the thoracic surgeon. Schmutzer and Linde (1958) reported an incidence of 25 per cent in cases of isolated dextrocardia and 8 per cent in cases of situs inversus viscerum totalis. Campbell and MacCarthy (1957), in an eight-year study at Guys Hospital, London, saw 46 patients with congenital heart disease and some form of transposition. Twenty had isolated dextrocardia; 16 had isolated levocardia, and 10 had situs inversus viscerum totalis. Only two cases of situs inversus without congenital heart disease were observed in the entire course of this study. Rosenberg and Rosenberg (1949) reported a case of situs inversus with coronary heart disease. In their review of the literature they made the interesting discovery that the combination of acquired heart disease and dextrocardia is very rare. Why this should be is difficult to say, unless it is because congenital defects mask the appearance of acquired disease or, in many cases, cause death before disease normally occurs. This is a problem that needs further study.

It is interesting that dextrocardia occurs in two forms. One type is a complete mirror image, with heart chambers and great vessels transposed; the other type is merely a rotation of the heart so that the apex comes to lie to the right. Unfortunately, many authors fail to make this distinction, so that the incidence of the two types can not be stated with any degree of accuracy. A study by Lowe and McKeown (1954), however, permits some estimation to be made. In a painstaking survey these investigators recorded 10 cases of isolated dextrocardia in a period during which 293,000 live births occurred, as well as 20 cases of dextrocardia with situs inversus (1:7,000), as a consequence of mass radiographic surveys. Of the cases of isolated dextrocardia, there were mirror-image inversions in 5 and rotated hearts with normal arrangement of the chambers and vessels in 4; in 1 the condition was of an unknown type. Of these 10 subjects only 3 were free of cardiac malformations; nevertheless, 1 of these 3 died, shortly after birth, of other gross malformations. The other 7 had severe cardiac malformations with cyanosis and, in addition, 4 of the 7 had pulmonary atresia. Preceding this report, a survey by McKeown, MacMahon and Parsons (1953) provides interesting supplemental data. They tried to collect all cases of congenital heart disease in children born in Birmingham, England, during a ten-year period. Six hundred and thirty-three cases were recorded, including 7 cases of dextrocardia. In 2 of the cases of dextrocardia there were visceral transposition and bronchiectasis; in 4, gross cardiac defects, death resulting in 3. The fifth child, although free of cardiac abnormalities, died shortly after birth as a result of other malformations.

These two reports probably reflect quite accurately the incidence of dextrocardia and of associated cardiac malformations, as well as the resulting mortality rate.

In the majority of cases, visceral transposition is discovered during roentgen examination. In some cases, however, it was missed by unthinking reversal of plates during examination, with consequent embarrassing discovery of the condition during operation. A thoracic roentgenogram will permit a tentative diagnosis of dextrocardia, the extent of inversion being determined by abdominal roentgen examination. Reports of this kind from the armed forces are valuable for estimating the incidence of situs inversus in normal healthy young men. Caplan (1946) found 12 cases of dextrocardia, which proved to be situs inversus viscerum totalis, during Naval enlistment examinations. The incidence was 1:8,400, and all 12 subjects were in good health. Richman (1947) reported 3 similar cases from examination at the Army Hospital, Richmond, Virginia. The incidence here was 1:5,000, all 3 persons again being in good health.

From a clinical standpoint, defects of the respiratory system are probably the most important of all the viable defects that accompany situs inversus. Kartagener (1933), in a report of 4 cases, was the first to describe the triad of situs inversus, bronchiectasis and chronic sinusitis. Subsequently, Kartagener and Horlacher (1935) reported 6 additional cases. In 1938 Adams and Churchill reported 5 cases from Massachusetts General Hospital. This included approximately 22 per cent of the cases of situs inversus observed in this hospital in a period dating back to 1886. Olsen (1943) reviewed 85 patients with dextrocardia and found that 16.5 per cent (14 patients) had bronchiectasis, in contrast to a 0.5 per cent incidence of bronchiectasis among all patients at the Mayo Clinic. Olsen also expressed the opinion that in most cases bronchiectasis is acquired. An additional observation was that 11 of the 85 patients in this study had additional anomalies, including congenital heart disease, hydrocephalus, imperforate anus, cleft palate, flail thumb and accessory digits. Torgersen (1947) observed bronchiectasis and nasal polyps in 10 per cent of the persons with situs inversus whom he studied. He reported that the frontal sinuses were small in cases of situs inversus associated with bronchiectasis and of average size in cases of situs inversus without bronchiectasis. A strong pattern of inheritance is indicated by the fact that Torgersen (1950 A, 1952) noted a 25 per cent incidence of bronchiectasis and nasal polyposis among 77 siblings of 28 persons with Kartagener's syndrome, while among 496 siblings of 93 persons with situs inversus alone there were only 3 with nasal polyps and none with bronchiectasis. In 1949, on the basis of a larger number of cases, Torgersen reported a 25 per cent incidence of bronchiectasis in persons with situs inversus. Schmutzer and Linde (1958) estimated the incidence of bronchiectasis in persons with situs inversus totalis or dextrocardia at 12-23 per cent, in contrast to an incidence of bronchiectasis in the hospital population of 0.03 to 0.5 per cent. The authors cited reported that bronchiectasis accompanying situs inversus is tubular rather than cystic and, in most cases, the acquired type of the disease.

Whether the bronchiectasis accompanying situs inversus, or any bronchiectasis, is acquired or congenital is difficult to say. The following reports seem to indicate that in a high percentage of cases of Kartagener's syndrome the bronchiectasis is congenital.

Bergstrom and others (1950), in a study of the familial occurrence of Kartagener's syndrome, reported 2 cases of Kartagener's triad and 2 cases of bronchiectasis among the 6 children of one family. They emphasized the fact that this syndrome is a pediatric problem, since they had collected 13 cases from the literature in which it was recognized before the subjects were 2 years of age and 10 more in which children under 14 years of age were affected. Five more cases of Kartagener's syndrome in children have been reported by Dickey (1953). In 1 of these cases the condition was diagnosed when the child was 6 weeks of age; death due to cardiac defects occurred at the age of 14 months. Three other children, aged 9, 10, and 14 respectively, underwent lung resection, and the fifth child, aged 4, was awaiting surgical intervention.

It is our opinion that in most, if not all, cases bronchiectasis has a congenital basis. In the development of the lungs immature bronchial pouches are formed, which are often devoid of elastic or muscular tissue. The major factor in the development of these pouches, which are susceptible to dilation, is the mechanical obstruction of the developing lung by surrounding tissue.

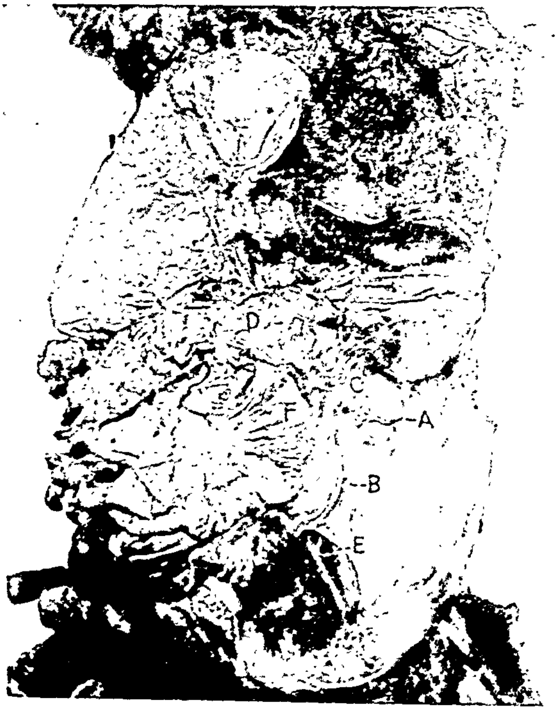

Fig. 3.—Dissection to show fixed terminal portion of ileum and cecum with subhepatic appendix on left side. Note large size of stomach, which has been turned upward. *A*, appendix; *B*, fixed ileum; *C*, cecum; *D*, transverse colon; *E*, ureter crossing external iliac artery, and *F*, small intestine.

This theory gains support from the fact that the lobes and segments of the lungs adjacent to the heart are invariably involved in bronchiectasis. Foulk (1957) has presented a case of Kartagener's syndrome in which this is particularly well illustrated. It seems logical to suppose that the factor of mechanical obstruction is greatly increased in cases of dextrocardia, since the lungs would remain in their normal position. To prove this and other assumptions, future reports must be more detailed. Quite frequently no mention is made of age or sex or race, and it is also common to speak of situs inversus without specifying the degree of inversion.

Wood and Blalock (1940) have reviewed the literature on situs inversus totalis and diseases of the biliary tract. They reported a total of 18 cases, including a case of their own, and concluded that the incidence of disease of the biliary tract is no higher than in the general population. The localization of pain in these persons is interesting. Eleven had pain in the left upper abdominal quadrant and the back; 2 on the right side, and 3 in the epigastrium. In 2 cases the information was not available. This is in marked contrast to the location of referred pain in the person with situs inversus and appendicitis. DePol (1935) collected 46 cases from the literature and noted that more than half of these had pain on the right side; unfortunately, in only 7 of these cases was the correct diagnosis of situs inversus made before the operation.

Almy, Volk and Graney (1953) presented a case of right-sided stomach in which all other viscera were in their normal positions. Kelley (1955) reported 2 cases of transposed stomach in 115,464 hospital admissions, in 1 of which diaphragmatic eventration occurred. In these extremely rare cases the stomach, the duodenum and the first part of the jejunum were transposed. In relation to transposition of the stomach, the condition of the pylorus is of considerable interest. Although the data are meager, there are nevertheless definite indications that the arrangement of the musculature at this site may be abnormal. Pernkopf (1926) reported 3 cases of stomach inversion, in 2 of which there was absence of the pyloric sphincter, with no differentiation of the musculature in this region. In contrast, the patient in the third case exhibited thick pyloric musculature. Greenblatt (1935) reported a case of congenital duodenal atresia in a 4-day-old white boy with complete transposition of the viscera. Of considerable interest is the fact that the infant was the surviving member of a set of twins, and unfortunately no data were given concerning the stillborn member. It should be recalled that in 1 of our 3 cases of infantile situs inversus pyloric stenosis was also the critical factor in causing death. Since pyloric stenosis is due to a recessive gene, with some reduction of penetration in the males but much more in the female (Snyder, 1946), a critical study of its occurrence and association with situs inversus is in order.

Torgersen (1948 and 1949) related another interesting association, which to our knowledge has been observed by only one other investigator. Of 56 cases of situs inversus observed by Torgersen, the patients in 23 per cent had either six lumbar vertebrae or lumbosacral vertebrae. He examined 61 parents and siblings and 500 normal situses for comparison and noted the incidence of these variations to be 5 per cent and 7.6 per cent respectively. This study strongly suggests a correlation between situs inversus and vertebral anomalies. The other report of this type (Pichel Warner, 1956) concerned a case of abdominal situs inversus in a 22-year-old white soldier. Roentgen examination of this patient revealed a failure of segmentation of the fifth lumbar and first sacral vertebrae. Interesting too, in this respect, is a report of costal anomalies coupled with situs inversus (Chenebault and Le Pape, 1956).

Situs inversus is a condition of reversed asymmetry which, judging from the diverse sources of information, occurs in all races and nations. Unfortunately, the reports are not always precise enough to allow classification into the several different types of inversion that may occur. Because of this, and also because many cases are overlooked, in routine examination an accurate survey of the incidence and the relation to pathologic change is difficult. Several problems are particularly important, such as the occurrence of situs inversus in stillborn infants and in children who die soon after birth. In this respect it would be extremely simple to observe the umbilical cord in all births, since Cleveland (1926) has stated that it is wound spirally to the right instead of to the left, as it leaves the placenta, in cases of inversion. Mass thoracic roentgen studies should include observations on dextrocardia and follow-up examinations to establish the type of dextrocardia and the completeness of inversion. The tangled evidence related to the cause of visceral inversion could be greatly clarified by simple interviews with groups of affected persons. Twinning and monster formation, if studied properly, will also provide valuable clues to this problem. In the course of routine physical examination, evidence could be gathered as to the incidence of situs inversus, since the respective height of the testes is also tentatively diagnostic, the right testis being lower than the left. In these cases the disposition of crown whorl has not been thoroughly investigated, and, while handedness apparently is not a factor, it too should be considered in examination. Finally, Kartagener's syndrome and the syndrome of atrioventricularis communis, agenesis of the spleen and situs inversus should be subject to thorough study.

SUMMARY

Four cases of situs inversus are presented and discussed. In the first the condition was observed in a cadaver specimen dissected at Jefferson Medical College. A detailed account of this dissection is given. The other 3 cases, observed at Jefferson Medical College Hospital, are examples of situs inversus with associated multiple defects, resulting in early death.

The incidence of situs inversus totalis is estimated as between 1:5,000 and 1:10,000. The various degrees of situs inversus, which occur less frequently, are listed, and their occurrence in the general population and in hospital populations is mentioned. The literature is reviewed and analyzed from a number of standpoints. First, the genetic and embryologic studies relating to this condition are presented, and a hypothesis regarding the cause of situs inversus is given. It is suggested that situs inversus is the result of either genetic or developmental factors. In the first instance a single autosomal recessive gene with incomplete penetration is responsible. This gene is partially lethal. In the second a developmental arrest, due to any of a variety of causes, results in fission at an early stage. This occurs after bilateral symmetry is established and results in mirror-image monozygotic twins, either of whom may die and be resorbed at an early age.

The relation of situs inversus to a host of pathologic conditions is pointed out. These conditions include Kartagener's syndrome (bronchiectasis, sinusitis and situs inversus); the syndrome of atrioventricularis communis; agenesis of the spleen with partial situs inversus, and a syndrome of multiple congenital defects accompanying situs inversus and resulting in early death of the newborn infant. The association of other defects with situs inversus is also discussed.

Methods of detecting situs inversus are

reviewed, and it is suggested that greater care be exercised to insure recognition of this condition at an early age. The value of adequate surveys and accurate classification is stressed. In particular, mass thoracic roentgen studies should be reviewed for possible dextrocardia. The patients should be reexamined to determine the degree of transposition, the presence or absence of associated defects and the occurrence of similar conditions in related persons.

ZUSAMMENFASSUNG

Vier Fälle von Situs inversus werden vorgestellt und erörtert. Die erste Beobachtung wurde bei einer Obduktion im Jefferson Medical College, über die genau berichtet wird, gemacht. Bei den anderen drei Fällen aus dem Jefferson Medical College Hospital handelt es sich um Beispiele von Situs inversus mit vielen gleichzeitig bestehenden Defekten, die zu frühem Tode führten.

Die Häufigkeit des totalen Situs inversus wird auf zwischen 1:5000 und 1:10000 geschätzt. Die verschiedenen Grade des Situs inversus, die seltener vorkommen, werden aufgeführt, und die Häufigkeit ihres Auftretens unter der allgemeinen Bevölkerung und unter Krankenhausinsassen wird erwähnt. Das Schrifttum wird überprüft und von verschiedenen Standpunkten aus analysiert. In erster Linie wird über die entwicklungsgeschichtlichen und embryologischen Untersuchungen bezüglich dieser Fehlbildung berichtet; ferner wird eine Hypothese für die Ursache des Situs inversus aufgestellt. Es wird angenommen, dass der Situs inversus das Ergebnis entweder genetischer oder entwicklungsmässiger Faktoren ist. Im ersten Falle ist ein einzelnes autosomes rezessives Gen mit unvollständiger Penetration verantwortlich. Dieses Gen ist teilweise ein lethaler Faktor. Im zweiten Falle führt ein Entwicklungsstillstand, der als Folge einer von mannigfachen Ursachen eintritt, zur Spaltung in einem frühen Stadium. Dies erfolgt nach Herstellung der Symmetrie beider Seiten und führt zur Entstehung eineiiger Spiegelbildzwillinge, von denen einer zugrunde gehen und im frühen Stadium resorbiert werden kann.

Es wird auf die Beziehung des Situs inversus zu einer grossen Menge von krankhaften Veränderungen hingewiesen. Zu diesen gehören das Kartagenersche Syndrom (Bronchiektasen, Sinusitis und Situs inversus), das Syndrom der Vereinigung von Herzkammern und -vorhöfen, Aplasie der Milz mit teilweisem Situs inversus und ein Syndrom mehrfacher angeborener Defekte, die mit Situs inversus vergesellschaftet sind und zum frühen Tode des Neugeborenen führen. Auch andere Missbildungen, die bei Situs inversus vorkommen, werden erörtert.

Die Methoden zur Entdeckung des Situs inversus werden dargestellt, und zu grösserer Sorgfalt zur Erkennung dieser Fehlbildung im frühen Lebensalter wird geraten. Der Wert angemessener Untersuchungen und genauer Klassifizierung wird hervorgehoben. Besonders sollten die Ergebnisse der röntgenologischen Reihenuntersuchungen des Brustkorbs nachgeprüft werden, um den Grad der Transposition, das Bestehen oder Fehlen vergesellschafteter Defekte und das Vorkommen ähnlicher Zustände bei Familienmitgliedern zu erkennen.

RIASSUNTO

Vengono presentati e discussi quattro casi di situs inversus. Nel primo l'anomalia si presentó alla dissezione anatomica eseguira al Jefferson Medical College, che viene riferita per esteso. Gli altri tre casi, osservati al Jefferson Medical College Hospital, sono esempi di situs inversus associato ad altre anomalie che condussere ad una morte precoce. La frequenza sel situs inversus totale e' valutata fra 1:5000

e 1:10000. I gradi intermedi, che si presentano con minor frequenza, vengono descritti e viene indicata la loro frequenza nella popolazione generale e in quella ospedaliera. Viene fatta una rassegna della letteratura sotto molti punti di vista. Dapprima vengono riferiti gli studi genetici ed embriologici in rapporto con l'affezione, e riassunte le ipotesi causali. Il situs inversus sarebbe il risultato di fattori genetici e di sviluppo; nel primo caso sarebbe responsabile un unico gene autosomico recessivo con incompleta penetrazione; questo gene sarebbe parzialmente letale. Nel secondo caso si tratterebbe di un arresto di sviluppo dovuto ad una qualche causa, e producente una fissione in uno stadio precoce. Questo dovrebbe verificarsi dopo che si e' stabilita la simmetria bilaterale e conduce alla formazione di gemelli monozigoti fatti a immagine speculare, uno dei quali puo' morire e riassorbirsi ad un epoca precoce.

Vennono trattati i rapporti fra il situs inversus e le malattie. Queste, comprendono la sindrome di Kartagener (bronchiettasia, sinusite e situs inversus), la sindrome della cavita' atrioventricolare comune, la agenesia della milza con parziale situs inversus e la sindrome di associazione di anomalie multiple con situs inversus che conduce rapidamente a morte il neonato.

Vengono passati in rassegna i metodi per la diagnosi dell'affezione e soprattutto per il suo riconoscimento in una eta' giovane. In particolare vengono raccomandati gli esami radiologici collettivi, e il riesame dei casi per determinare il grado di trasposizione, la presenza o l'assenza di anomalie associate e la eventuale presenza della stessa affezione nei famigliari.

RÉSUMÉ

Quatre cas de situs inversus sont présentés et discutés. Le premier cas a été observé sur un cadavre au cours d'une dissection au Jefferson Medical College Hospital, et les auteurs en donnent un compte-rendu détaillé. Les trois autres cas, qui proviennent du même hôpital, sont des exemples de situs inversus associé à d'autres affections multiples ayant provoqué une mort prématurée.

Il est estimé que l'incidence du situs inversus totalis varie entre 1:5.000 et 1:10.000. Il peut se présenter à des degrés variables qui sont mentionnés ici, mais plus rarement. Les auteurs donnent des chiffres quant à leur fréquence parmi la population et parmi les hospitalisés, analysent la littérature sous divers aspects, et étudient le situs inversus du point de vue génétique et embryologique. Cet état pourrait être dû à des facteurs soit génétiques soit de croissance. Dans le premier cas il faudrait mettre en cause un gène autosome récessif à pénétration incomplète, partiellement asphyxié; dans le second cas, un arrêt de croissance (plusieurs causes possibles) provoque une fission à un stade précoce. Cela se produit après l'établissement de la symétrie bilatérale (jumeaux monozygotiques, dont l'un ou l'autre peut mourir et être résorbé précocement).

Les rapports entre le situs inversus et un hôte pathologique sont décrits. L'auteur mentionne les états suivants: syndrome de Kartagener (bronchiectasie, sinusite et situs inversus); syndrome atrioventriculaire; agénésie de la rate avec situs inversus partiel; syndrome de lésions multiples congénitales accompagnant le situs inversus, conduisant à la mort du nouveauné. L'association d'autres lésions avec le situs inversus est également discutée.

Les méthodes de diagnostic sont énumérées et il est recommandé d'attacher une plus grande attention à la reconnaissance de cet état à un stade précoce. L'importance d'examens complets et d'une classification judicieuse des cas est soulignée. En particulier les examens radiographiques en série devraient être repris et

étudiés à nouveau afin de déterminer si possible le degré de transposition, la présence ou l'absence de lésions associées, ainsi que l'éventualité d'un état familial.

RESUMEN

Se presentan y discuten 4 casos de transposición visceral. El primero de estos casos fué observado en un cadáver desecado en el Jefferson Medical College. Se da un completo informe de este caso. Los otros 3 casos observados en el J.M.C. son ejemplos de la misma enfermedad con múltiples defectos asociados que conducen a una muerte rápida.

La frecuencia de la transposición visceral se estima entre 1:5.000 y 1:10.000. Los diversos casos de transposición visceral que pueden presentarse con menos frecuencia son enumerados así como se menciona su aparición en la población en general y en la población hospitalaria. Se hace una revisión completa de la literatura sobre esta cuestión. Se estiman a continuación las condiciones genéticas y embriológicas así como la hipótesis concerniente a los casos de situs inversus. Se sugiere que el situs inversus es el resultado de factores genéticuos o del desarrollo.

En el primer caso el responsable sería un gene recesivo autosomático solo con penetración incompleta. Este gene se parcialmente letal. En el caso segundo una parada en el desarrollo consecutiva a una o varias causas resultaría en una fisión en un estadio precoz. Esto ocurre después de que la simetría bilateral ha sido establecida y teniendo como consecuencia unos gemelos monocigóticos en imagen de espejo, uno de los cuales moriría y sería precozmente reabsorbido.

También se indica la relación en un situs inversus con un hesped de condiciones patológicas. Estas condiciones incluyen el síndrome de Kartagener (bronquiectasias, sinusitis e inversión visceral), el síndrome de atrioventricularis comunis; la agensia del bazo con situs inversus que trae como consecuencia la muerte precoz del recién nacido. Se exponen diversos métodos de diagnóstico de las inversiones viscerales y se insiste en el gran cuidado que es necesaria para reconocer esta afección lo antes posible. Particularmente interesan los estudios cuidadosos del tórax para determinacos casos de transposición. La presencia o ausencia de defectos concomitantes y la aparición de condiciones semejantes en los familiares.

SUMARIO

Apresentam e discutem quatro casos de situs inversus. O primeiro foi descrito pós mortem em necropsia feita no Jefferson Medical College. Os outros 3 são exemplos de situs associados con defeitos multiplos resultando em morte precoce.

Estima a incidência em 1:5.000 a 1:10.000. Cita os varios graus que ocorrem menos frequentemente. Fazem a revisão da literatura e analisam varios aspectos. Apresentam inicialmente os aspectos geneticos e os estudos embriologicos dando uma hipotese causal. Sugerem que o situs inversus é o resultado de fatores geneticos ou de desenvolvimento. No primeiro caso existe um gen recessivo autosomatico com penetração incompleta. Este gen é parcialmente letal. No segundo há umaparada do desenvolvimento devida a uma variedade de causas. Isto ocorre apos a simetria bilateral e resulta numa imagem de espelho em gemeos monozigotos um dosquais morre e é reabsorvido no estagio inicial. Salienta a correlação entre o situs e as alterações patologicos como a sindrome de Kartagener (bronquiectasias, sinusite e situs inversus) agenesia do baço e situs parcial e uma sindrome de multiplos defeitos congenitos que resultam na morte do recemnascido. A associação de outros defeitos com o situs tambem é discutida. Fazem a revisão dos metodos

proprios para reconhecer a anomalia precocemente e apresentam os criterios para uma classificação. Citam o censo toracico que deve ser reexaminado para determinar o grau de transposição, a presença ou ausência de defeitos associados e a ocorrencia de situaçõessemelhantes em familiares.

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> By palpation we obtain further information about our patients' bodies through the sense of touch, and we also elicit certain reactions on their part, such as hyperaesthesia and tenderness. We are all accustomed from childhood to use our eyes, though the faculty of observation is acquired; but the sensation of touch varies enormously in its acuity from individual to individual. It is said that some cardsharpers can feel the pips on playing cards, and that burglars can trace the movements of the tumblers in a lock by sensing their fall. A highly developed tactile sense is part of the equipment of the skilled clinician; this we must strive to acquire by constant practice, by developing tactile discrimination, and by learning to recognize the feel of familiar and rare conditions by frequent contact. Such education is a matter of developing association tracts between the finger and the brain, as we speedily realize when we are forced by some accident to use an unaccustomed finger for rectal examination.
>
> —*Ogilvie*

Genitourinary Surgery

Certain Aspects of Tuberculosis of the Genitourinary Tract

Stones and Renal Tuberculosis; Puigvert's Operation for Tuberculosis of the Lower Portion of the Ureter

WILLIAM DREYFUSS, M.D., F.A.C.S.
CLEVELAND, OHIO
AND
JACQUES BARAMBON, M.D.
GENEVA, SWITZERLAND

Two cases are reported in which stones and renal tuberculosis coexisted. It was possible to save one kidney and obtain cure by conservative surgical intervention and medical therapy.

Etiologic problems as to the connection of this coexistence of stones and tuberculosis are discussed.

A case is presented in which Puigvert's operation was performed with success. The literature is reviewed as to the prerequisites, chances and limitations of this operation.

IT SHOULD be clear from the beginning that in mentioning about stones in connection with renal tuberculosis we do not mean calcifications of caseous matter but genuine calculi. Probably owing to the fortunate fact that infection with Koch's bacillus and subsequent morbidity is incomparably less frequent in the United States than in other countries, there is a paucity of papers on this subject.

Couvelaire and Brizon reviewed 765 cases of renal tuberculosis and noted that stones were present in 29, or close to 4 per cent. In their elaborate study they observed that 13 of these calculi were in the pyelocaliceal system, 4 in the ureter, 4 in the lower part of the genitourinary tract and 8 in the noninfected opposite kidney.

We have had an opportunity to observe 2 cases of calculi in a tuberculous kidney.

CASE 1.—C. B., a man aged 58, was admitted to the hospital on April 25, 1949.

This patient had first been seen in April 1949, when he was admitted for multiple sinuses on the scrotum. He was the child of Swiss parents, who had both died of "stroke." One sister had had pulmonary tuberculosis but is now cured. The patient himself had had tuberculosis of the right knee, which healed with ankylosis.

In 1944 "abscesses in both testicles" developed and had to be lanced by the family physician. Pus had drained from several sinuses off and on ever since. The patient also had be-

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From the Department of Urology, Huron Road Hospital, Cleveland

Submitted for publication May 5, 1949.

come impotent. Four weeks prior to admission he suffered what was called virus pneumonia. Since the attack of pneumonia, however, he had had chills, fever and an increased flow of drainage from the sinuses on the scrotum.

His weight was 190 pounds (86.2 Kg.). He appeared well fed, with strong muscles, but the skin was pale. The temperature was 38.7 C. A blood count revealed 83 per cent hemoglobin.

There were 11,150 leukocytes per cubic millimeter of blood, with 73 per cent neutrophils, 25 per cent lymphocytes and 2 per cent large monocytes. The sedimentation rate was 18 mm. in one hour. Urinalysis revealed cloudy urine with a *p*H of 4.5 and a specific gravity of 1.022. There was a trace of albumin, but no sugar was present. Microscopically a few red blood cells, a moderate number of white blood cells and much amorphous matter were observed. Serologic tests gave negative results. Blood chemical values were normal; sugar, 90 mg. and urea nitrogen, 20 mg., per hundred cubic centimeters. The blood pressure in millimeters of mercury was 96 systolic and 90 diastolic.

The left knee was stiff, but otherwise there were no physical abnormalities except for the local signs and the hypotension, the latter of which, incidentally, changed to normal before the patient's discharge.

Local Signs.—There was a sinus, draining pus, on the left side of the scrotum. The left testicle was adherent to the scrotal skin and much enlarged. The area of the epididymis was remarkable for additional induration, but there was no line of cleavage between it and the testicle. The right testicle was normal in size and not tender. The epididymis was dense and thickened, and the skin was adherent. The right side was nodular, thickened and hard. There was also adherence of the scrotal contents to the skin at a point which seemed to be a thin scar.

Rectal Observations.—The prostate was flattened, had some soft spots and was not enlarged; no sulcus was palpable, and there was more than normal tenderness on palpation. The left seminal vesicle was hard, enlarged and tender.

Bacteriologic Data.—A smear from the scrotal sinuses revealed tubercle bacilli, as did a smear of the patient's urine.

Thoracic Study.—A roentgenogram of the chest showed spotty calcifications in both apical regions (healed tuberculosis).

Cystoscopic Study.—The anterior portion of the urethra was normal in the area of the verumontanum; the mucous membrane was velvety and bled readily on being touched with the instrument. There were fine milium-like elevations suggestive of tubercles. There were numerous openings, giving the posterior urethra the appearance of a sieve. These, no doubt, were the scarry orifices of prostatic ducts. Digital examination by rectum over the indwelling cystoscope revealed the almost total absence of prostatic tissue, which may have been consumed by the tuberculous infection. The left seminal vesicle was hard and much enlarged. The right seminal vesicle was palpable, but much softer.

The bladder showed inflammatory granulations of no specific type in a small area below the left orifice. The rest of the organ presented increased vascularization, but the surface in general was normal, including the right ureteral orifice. Ureteral catheters, No. 5, were easily inserted to a distance of 26 cm. bilaterally. The specimen from the right side was clear; from the left drained cloudy urine.

Urinalysis.—The bladder urine showed only acid-fast bacilli; the renal urine in ordinary culture showed no growth.

Roentgen Examination.—A pyelogram was taken after a preliminary flat film had been obtained. The flat film showed numerous calcified lymph nodes of the mesentery in the lower part of the abdomen.

There was a large calculus (about 1 by 1.5 cm.) overlying the midportion of the left kidney. A smaller irregular calcification (4 by 6 mm.) was observed in the upper area of the same organ.

The pyelogram showed a normal right kidney and right ureter. On the left there was a bifurcation of the renal pelvis, which otherwise was dilated. The aforementioned calcifications lay in the upper calyx and in the kidney. The ureter appeared normal.

Diagnosis.—The diagnosis was calculi in the left kidney with lesions suggestive of tuberculosis in view of other manifestations and clinical signs.

Treatment.—After preparation with daily doses of 1 Gm. of streptomycin for one week, the patient was brought to operation. General anesthesia was induced; the lower part of the abdomen and the genital area were prepared and draped. The right side was operated

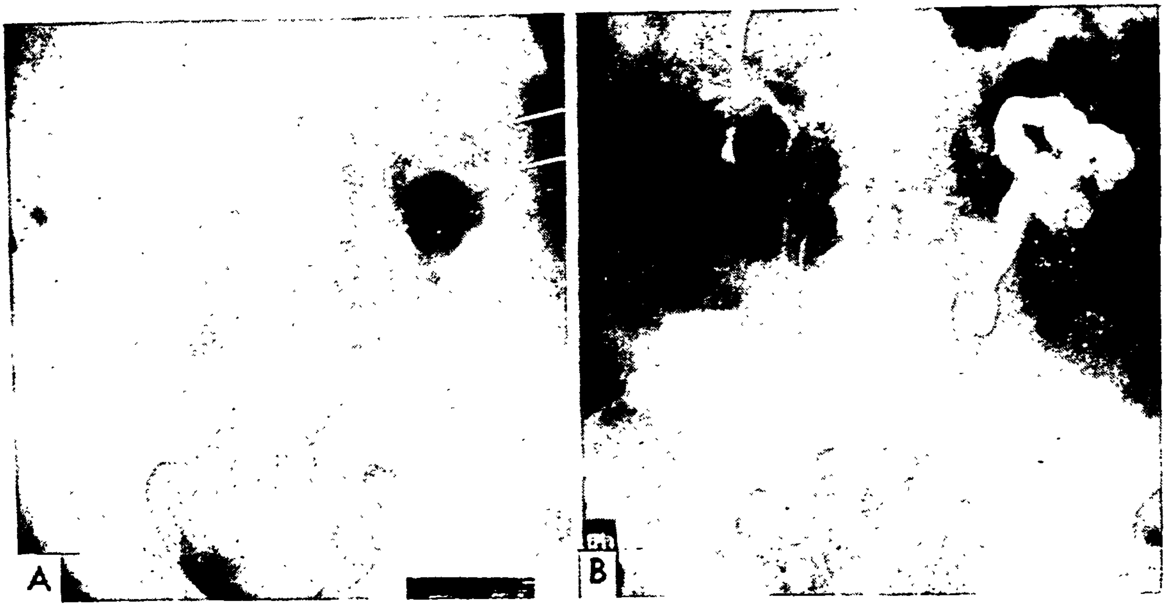

Fig. 1 (see text).

on first. An incision was made from the inguinal region down to the scrotum, circumcising the scrotal skin where the epididymis was attached to the scrotum. The cord was exposed and isolated. The vessels, the cremaster and the vas itself, which, by the way, proved to be normal in appearance, were separated. Each portion was severed and tied. The vas was phenolized. Then the testicle and epididymis, with the cutaneous portion attached, were developed and removed. No pus was encountered.

After the wound was closed, the left side was similarly exposed. Here, however, the ductus deferens was considerably thickened. In developing the testicle, we encountered an abscess in the lowermost portion of the scrotum. We excised until we were in healthy tissue. This involved the sacrifice of a great deal of skin. One Gm. of streptomycin was placed in the wound, which was then closed.

The preoperative medication, 1 Gm. of streptomycin daily, was continued. The patient made an uneventful recovery and was discharged on May 15, with instruction to his home town physician to continue the treatment as in the hospital. He was informed that his left kidney was tuberculous and contained stones. The need for surgical intervention after three months was emphasized.

Pathologic Report.—Gross: The specimen consisted of both testicles, the spermatic cord and the epididymis. There was a small mass of skin on one testicle, measuring 2 cm. in length. The testicle was 6 cm. in diameter, with the surrounding tunica albuginea. On section the tissue was brownish-white. The tubules stripped with difficulty. In the region of the epididymis there was a large abscess 2 cm. in diameter, containing thick caseous material. On section of the spermatic cord, it proved to be moderately dilated, with the plicae flattened. The other testicle showed a similar but more marked picture, with hemorrhage and a sinus tract 4 mm. in diameter. *Microscopic:* A testicular section showed the tubules to be numerous, with spermatogenesis diminished. The interstitial tissue showed a few focal areas of inflammatory reaction, which were most prominent in the epididymis. Here, there were small and large areas of caseous necrosis, with a surrounding layer of granulomatous tissue. An occasional central giant cell was seen, surrounded by epitheloid cells and lymphocytes. Section of the skin showed the sinus tract lined by similar granulomatous inflammatory tissue. Sections of the spermatic cord showed the same type of reaction. *Final Diagnosis:* The final diagnosis was bilateral tuberculosis of the testis, epididymis and spermatic cord.

On October 11 the patient was seen in the office. The scars were solid. He had gained 18 pounds (8.2 Kg.), felt well, and worked at his regular job. Rectally, the observations were the same as on admission, except that the right seminal vesicle seemed more dense now. The urine was hazy; the *p*H was 4.5. There was no albumin or sugar. Microscopically there were 8 to 15 leukocytes per high power field.

The patient brought with him an intravenous pyelogram taken in his home town. It showed good function bilaterally but revealed dilatation of the left renal pelvis and the aforementioned calculi. A twenty-four specimen of urine, also checked in the patient's home town, was negative for Koch bacilli.

The streptomycin treatment had to be discontinued after three months, on account of tinnitus and partial deafness.

From this moment on, in spite of all warnings, the patient disappeared from our sight until April 1958, when he wrote that he would like to have an appointment "because I am a very sick man."

He stated that since December 1957 retropubic pain had developed with urgency of urination, tenesmus and occasional blood in the urine, which otherwise was very cloudy.

We advised admission, and on May 9 he entered the hospital. His general appearance was pale and sickly. He weighed 214 pounds (96.1 Kg.).

Physical Examination.—The old field of operation was visible as a solid scar. There was tenderness in the left flank, but no masses could be palpated. Rectally there was almost total absence of the prostate gland, and both seminal vesicles appeared as hard strands.

The blood pressure in millimeters of mercury was 170 systolic and 120 diastolic, a notable change from 126 systolic and 80 diastolic when last determined in 1949, but the electrocardiogram was normal. The other physical signs were not remarkable. There was frequency of urination (every twenty to thirty minutes).

Laboratory Data.—Urinalysis revealed a *p*H of 4.5, a positive reaction for albumin and a negative reaction for sugar. Microscopic values of 3 plus for leukocytes and 1 plus for erythrocytes. Tubercle bacilli could be stained from a smear of the microscopic specimen.

Roentgen Examination.—The thoracic film revealed no change since 1949. A flat film of the kidneys, ureters and bladder showed the shadow of the right kidney to be normal and that of the left kidney enlarged. The aforementioned calcifications in the lower part of

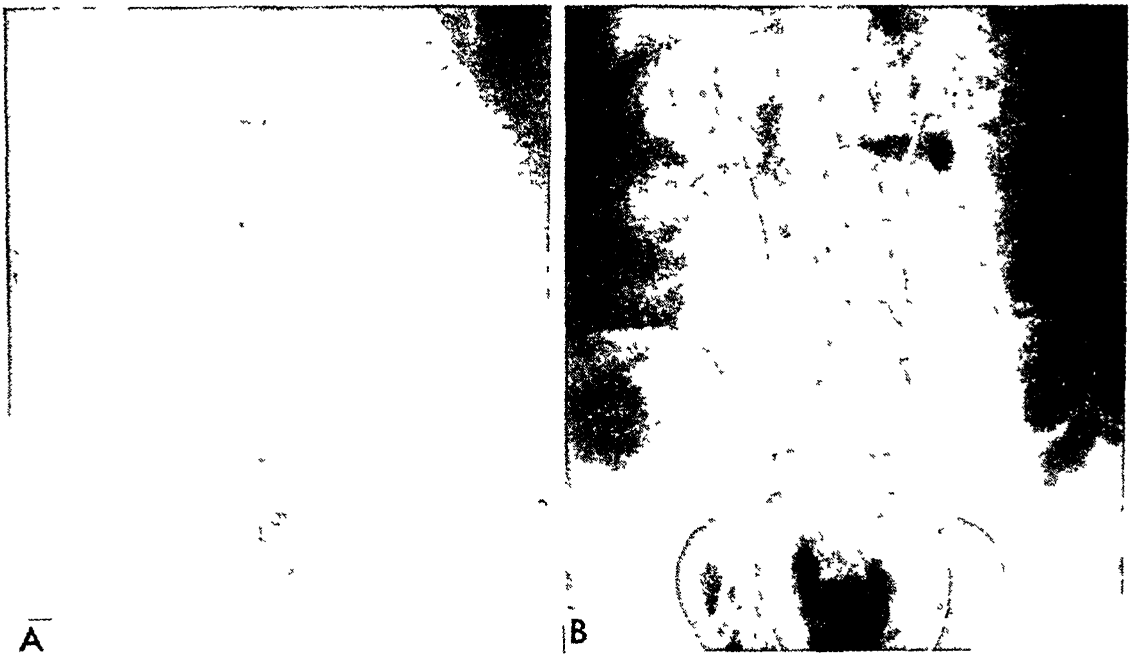

Fig. 2 (see text).

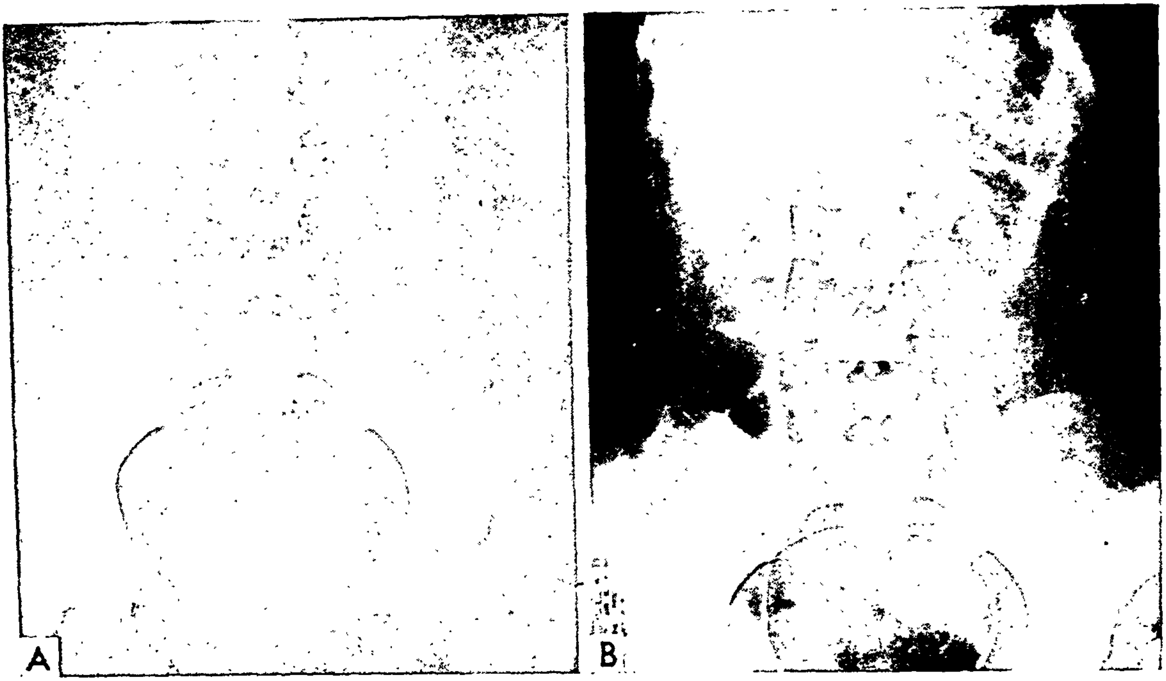

Fig. 3 (see text).

the abdomen were noted, as well as those in the kidney area on the left side (Fig. 1*A*).

An intravenous pyelogram showed the right kidney and ureter to be normal. At no time was sufficient contrast material excreted by the left kidney to show the internal structures.

Cystoscopic Study.—The anterior portion of the urethra was normal. There was widespread scarring in the posterior portion, with the meshlike appearance of the wide-open prostatic ducts previously described.

The appearance of the bladder was suprisingly good on the right side and on the dome. The left orifice, however, was of the golf-hole type and was surrounded by a large area of granulation tissue extending into the left sector of the bladder and the upper sector on the left side. The periphery of this tissue showed elevations strongly suggestive of tuberculosis.

A No. 5 ureteral catheter was easily introduced on the right side. This was done in order to see whether this kidney was still free of infection. The urine from this side was clear, and a later culture proved negative for tubercle bacilli. The left orifice accepted a No. 5 catheter with some hesitation, but it could finally be inserted to a distance of 25 cm. The urine from this side was purulent and contained tubercle bacilli.

Retrograde pyelograms showed the right kidney and ureter to be normal in their inner structures. The left ureter was irregular and constricted below the fifth lumbar level but dilated above it. The inner structures of the left kidney showed a U-shaped blunted cavity with almost no differentiation of the calyces (Fig. 1*B*).

With the diagnosis of tuberculosis verified, treatment was started with daily doses of 1 Gm. of streptomycin, 300 mg. of Nydrazid and 12 Gm. of PAS.

He was brought to operation after ten days of preparation.

A ureteronephrectomy from the insertion into the bladder upward was done. Healing was uneventful, and treatment was continued as preoperatively instituted, except that the dose of streptomycin was reduced to 1 Gm. twice a week, to be continued for one year.

Pathological Report, May 21, 1958.—Gross: The specimen consisted of the left kidney, which was multicystic and had been dissected. It measured 11 by 6 by 4 cm. It was pinkish red, and there were punctate hemorrhagic areas on the surface. Some areas were grayish tan. The section of the kidney was made up almost entirely of cavities, which extended from the cortex to the medullary junction. In the renal pelvis there was a stone measuring 1.5 by 1.5 cm. This was grayish black. The cavities were filled with cheeselike material. The walls of the cavities varied between 1.5 and 1 cm. thick. The largest measured 3.5 by 5 cm. The pelvis itself was whitish gray, with small hemorrhagic areas. The ureter next to the pelvis was 2 cm. wide. The internal folds were gray, granular and nodular. The largest of these nodules measured 1 by 2 mm. The lower end of the ureter was white to gray and moderately firm. The lumen was narrow. There was a granulation mass on the lower end.

Whereas the inner lining of the aforedescribed cavities was for the most part smooth and showed a small amount of granulation, that of one of them had a hard, bony appearance of approximately 2 by 1.5 cm. Between these cavities was yellowish gray fatty tissue.

Microscopic: Sections of the kidney showed a tuberculous process characterized by large areas of caseation. In some areas tubercle formation was observed. The caseating area was surrounded by inflamed granulation tissue with intense lymphocytic and epitheloid infiltration, lymphocytes and Langhans' giant cells.

The diagnosis was tuberculosis of the kidney and ureter and left nephrolithiasis.

Course.—Analysis of the stone showed a core of calcium oxalate surrounded by calcium phosphates and carbonates. Strangely enough, a trace of cystine was present. This may have been due to the presence of adherent connective tissue that was almost inseparable from the calculus.

The patient was discharged on June 1 in good condition, and instructed to continue the treatment as it had been given in the hospital on discharge. His family physician was so advised.

He was next seen on July 3 in the office. The frequency of urination was much reduced. The urine was surprisingly clear. Microscopically there were approximately 20 leukocytes and 4 to 6 erythrocytes per high power field. The blood pressure was 124 systolic and 80 diastolic. The patient had resumed his regular work and promised that he would continue the treatments and let us see him at regular intervals.

CASE 2.—Mrs. C. B., aged 43, was admitted to the hospital on June 26, 1957, with a history of pain in the right flank beginning five weeks prior to admission. The pain was described as dull, sometimes more intense and radiating to the right lower quadrant of the abdomen and to the vagina. A year earlier there had been some pain in the "pelvic organs," and the patient had been told that it was a virus infection. The urine at this time showed erythrocytes and leukocytes. There were no direct urinary symptoms. The early and family history were noncontributory.

Physical Examination.—The patient was in good condition, with good color, and weighed 148 pounds (67.1 Kg.). There was definite tenderness in the right flank and in the midabdominal area. No masses were palpable. The blood pressure in millimeters of mercury was 110 systolic and 80 diastolic.

Vaginal examination gave negative results, as did the remainder of the physical examination.

Laboratory Data. — The electrocardiogram was normal. A complete blood count revealed a hematocrit reading of 38 per cent. The value for hemoglobin was 12 Gm. The sedimentation rate was 48 mm. in one hour. A differential count revealed 62 per cent neutrophils, 3 per cent eosinophils and 36 per cent lymphocytes. Chemical tests of the blood showed the following values: urea nitrogen, 15 mg., cal-

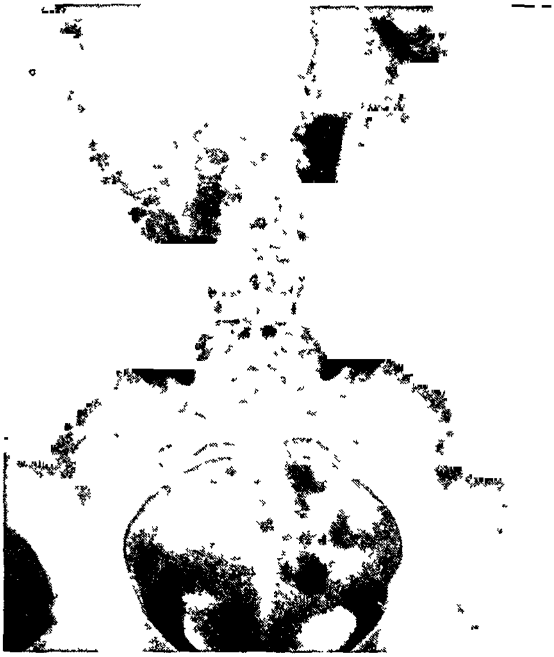

Fig. 4 (see text).

cium and phosphorus, 10 mg. and 4.35 mg. respectively, and sugar 125 mg., per hundred cubic centimeters. The results of serologic tests were negative.

The catheterized urine showed a *p*H of 5. The specific gravity was 1.018. The reaction for albumin was 1 plus and that for sugar was negative. The value for urobilinogen was normal. Bacteriologic study by ordinary culture revealed Aerobacter aerogenes in the bladder urine. Cultures from both kidneys were sterile.*

Roentgen Examination.—A thoracic film revealed no abnormality of the heart and lung fields, other than bilateral calcified lesions in the hilar area. A retrograde pyelogram revealed normal structures of the left kidney and ureter. On the right side there was a calculus in the lower pole, measuring 5 by 10 mm. Distortion and dilatation of the calyx surrounding the stone were present. It was noted that at one spot the dilatation extended close to the cortical surface. The rest of the right kidney and ureter was normal. There was some clubbing of the middle calyx (Fig. 1*A*).

Cystoscopic Data.—The urine obtained cystoscopically was yellow and cloudy. The anterior portion of the urethra was normal; the posterior portion showed a few villi. The bladder showed granular cystitis immediately adjacent to the sphincter area. The ureteral orifices were normal. No. 5 ureteral catheters were easily inserted to a depth of 25 cm. The urine on the left side was clear. On the right side it was cloudy.

Diagnosis.—The diagnosis of calculopyelonephritis in the lower pole of the right kidney was made.

Operation.—At operation on July 5 we observed considerable perinephritis, with dense adhesions. The kidney was isolated, and a rubber-shod intestinal clamp was placed on the pedicle, preparatory to partial resection. A wedge comprising the lower calyx, in which the stone could be palpated, was excised. The kidney pelvis was sutured with No. 000 chromic catgut, and the individual vessels were tied. When hemostasis was satisfactory, a few mattress sutures were placed on the edges of the renal wound and secured by fat pads. An incidental nephropexy concluded the operation. The postoperative course was feverish for about two weeks. It improved satisfactorily as soon as treatment was started with streptomycin, PAS and Nydrazid. (On July 11 tubercle bacilli were observed microscopically.)

Nevertheless, although the wound healed well at first, there was some discomfort in the right flank, and later a sinus developed, from which there appeared a serohemorrhagic drainage. This continued for two weeks, after which time it closed and remained healed. The patient was discharged on July 22 in good condition.

Repeated urinalyses revealed no tubercle bacilli in the smear and culture.

Pathological Report.—*Gross:* The specimen consisted of a renal pole measuring 4 by 2 by 1.5 cm. The surface was irregular in appearance; the consistency was firm. On section one observed a rugged gray stone. The surrounding calyceal lining was thickened and indurated and had fibrinous appositions.

Microscopic: Sections of the kidney showed interstitial fibrosis with marked round cell infiltration. The tubules were atrophic and the epithelial cells small. In some areas there was granulomatous formation, with multinucleated giant cells. Although no frank necrosis was noted, the diagnosis of tuberculosis was strongly suggested.

The diagnosis was chronic granulomatous inflammation of the kidney, tuberculosis and nephrolithiasis.

Analysis of the stone revealed calcium oxalates and phosphates.

The patient was treated by her family physician with 1 Gm. of streptomycin a week and daily doses of 300 mg. of Nydrazid and 12 Gm. of PAS. The latter had to be omitted after October.

By January 1958 the patient "felt fine" and had gained 6 pounds (2.7 Kg.) over her admission weight. The catheterized urine was clear; the *p*H was 4.5, and no sugar or albumin was present. Microscopically there were very rare red and white blood cells.

In March 1958 severe right unilateral headache developed, and on March 5 there was transient paralysis of the left hand. The patient was readmitted to the hospital. The urine was absolutely normal in every respect. Culture gave negative results for tuberculosis. A neurologic consultation was obtained. The opinion of the consultant was that the patient had a deep-seated, though small, vascular oc-lary junction. In the renal pelvis there was a stone measuring 1.5 by 1.5 cm. This was grayish black. The cavities were filled with cheeselike material. The walls of the cavities varied between 1.5 and 1 cm. thick. The largest measured 3.5 by 5 cm. The pelvis itself was whitish gray, with small hemorrhagic areas. The ureter next to the pelvis was 2 cm. wide. The internal folds were gray, granular and nodular. The largest of these nodules measured 1 by 2 mm. The lower end of the ureter was white to gray and moderately firm. The lumen was narrow. There was a granulation mass on the lower end.

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*It should be noted, however, that the patient had been treated with achromycin prior to admission. A smear for tuberculosis was not done.

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He was next seen on July 3 in the office. The frequency of urination was much reduced. The urine was surprisingly clear. Microscopically there were approximately 20 leukocytes and 4 to 6 erythrocytes per high power field. The blood pressure was 124 systolic and 80 diastolic. The patient had resumed his regular work and promised that he would continue the treatments and let us see him at regular intervals.

CASE 2.—Mrs. C. B., aged 43, was admitted to the hospital on June 26, 1957, with a history of pain in the right flank beginning five weeks prior to admission. The pain was described as dull, sometimes more intense and radiating to the right lower quadrant of the abdomen and to the vagina. A year earlier there had been some pain in the "pelvic organs," and the patient had been told that it was a virus infection. The urine at this time showed erythrocytes and leukocytes. There were no direct urinary symptoms. The early and family history were noncontributory.

Physical Examination.—The patient was in good condition, with good color, and weighed 148 pounds (67.1 Kg.). There was definite tenderness in the right flank and in the midabdominal area. No masses were palpable. The blood pressure in millimeters of mercury was 110 systolic and 80 diastolic.

Vaginal examination gave negative results, as did the remainder of the physical examination.

Laboratory Data. — The electrocardiogram was normal. A complete blood count revealed a hematocrit reading of 38 per cent. The value for hemoglobin was 12 Gm. The sedimentation rate was 48 mm. in one hour. A differential count revealed 62 per cent neutrophils, 3 per cent eosinophils and 36 per cent lymphocytes. Chemical tests of the blood showed the following values: urea nitrogen, 15 mg., cal-

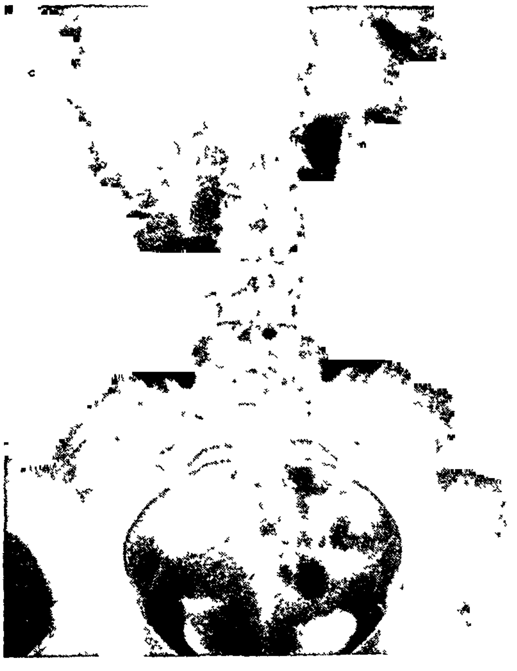

Fig. 4 (see text).

cium and phosphorus, 10 mg. and 4.35 mg. respectively, and sugar 125 mg., per hundred cubic centimeters. The results of serologic tests were negative.

The catheterized urine showed a *p*H of 5. The specific gravity was 1.018. The reaction for albumin was 1 plus and that for sugar was negative. The value for urobilinogen was normal. Bacteriologic study by ordinary culture revealed Aerobacter aerogenes in the bladder urine. Cultures from both kidneys were sterile.*

Roentgen Examination.—A thoracic film revealed no abnormality of the heart and lung fields, other than bilateral calcified lesions in the hilar area. A retrograde pyelogram revealed normal structures of the left kidney and ureter. On the right side there was a calculus in the lower pole, measuring 5 by 10 mm. Distortion and dilatation of the calyx surrounding the stone were present. It was noted that at one spot the dilatation extended close to the cortical surface. The rest of the right kidney and ureter was normal. There was some clubbing of the middle calyx (Fig. 1*A*).

Cystoscopic Data.—The urine obtained cystoscopically was yellow and cloudy. The anterior portion of the urethra was normal; the posterior portion showed a few villi. The bladder showed granular cystitis immediately adjacent to the sphincter area. The ureteral orifices were normal. No. 5 ureteral catheters were easily inserted to a depth of 25 cm. The urine on the left side was clear. On the right side it was cloudy.

Diagnosis.—The diagnosis of calculopyelonephritis in the lower pole of the right kidney was made.

Operation.—At operation on July 5 we observed considerable perinephritis, with dense adhesions. The kidney was isolated, and a rubber-shod intestinal clamp was placed on the pedicle, preparatory to partial resection. A wedge comprising the lower calyx, in which the stone could be palpated, was excised. The kidney pelvis was sutured with No. 000 chromic catgut, and the individual vessels were tied. When hemostasis was satisfactory, a few mattress sutures were placed on the edges of the renal wound and secured by fat pads. An incidental nephropexy concluded the operation. The postoperative course was feverish for about two weeks. It improved satisfactorily as soon as treatment was started with streptomycin, PAS and Nydrazid. (On July 11 tubercle bacilli were observed microscopically.)

Nevertheless, although the wound healed well at first, there was some discomfort in the right flank, and later a sinus developed, from which there appeared a serohemorrhagic drainage. This continued for two weeks, after which time it closed and remained healed. The patient was discharged on July 22 in good condition.

Repeated urinalyses revealed no tubercle bacilli in the smear and culture.

Pathological Report.—*Gross:* The specimen consisted of a renal pole measuring 4 by 2 by 1.5 cm. The surface was irregular in appearance; the consistency was firm. On section one observed a rugged gray stone. The surrounding calyceal lining was thickened and indurated and had fibrinous appositions.

Microscopic: Sections of the kidney showed interstitial fibrosis with marked round cell infiltration. The tubules were atrophic and the epithelial cells small. In some areas there was granulomatous formation, with multinucleated giant cells. Although no frank necrosis was noted, the diagnosis of tuberculosis was strongly suggested.

The diagnosis was chronic granulomatous inflammation of the kidney, tuberculosis and nephrolithiasis.

Analysis of the stone revealed calcium oxalates and phosphates.

The patient was treated by her family physician with 1 Gm. of streptomycin a week and daily doses of 300 mg. of Nydrazid and 12 Gm. of PAS. The latter had to be omitted after October.

By January 1958 the patient "felt fine" and had gained 6 pounds (2.7 Kg.) over her admission weight. The catheterized urine was clear; the *p*H was 4.5, and no sugar or albumin was present. Microscopically there were very rare red and white blood cells.

In March 1958 severe right unilateral headache developed, and on March 5 there was transient paralysis of the left hand. The patient was readmitted to the hospital. The urine was absolutely normal in every respect. Culture gave negative results for tuberculosis. A neurologic consultation was obtained. The opinion of the consultant was that the patient had a deep-seated, though small, vascular occlusion caused by Nydrazid. He suggested that we discontinue all antituberculosis medication, particularly since the urine was normal.

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*It should be noted, however, that the patient had been treated with achromycin prior to admission. A smear for tuberculosis was not done.

An intravenous pyelogram taken at this admission showed the left kidney and ureter to be normal. On the right side there was a slight deformity of the middle calyx. What remained of the lower calyceal system was narrow. This can be considered an altogether normal pyelogram for a kidney after partial resection (Fig. 2*B*).

The patient's condition improved and became entirely normal, so that she could resume her regular work.

COMMENT

In the first case the diagnosis of tuberculosis and stone of the left kidney was obvious. Unfortunately, the patient withdrew from treatment much too long, although this kidney hardly offered a good prospect for conservative operation. It is hoped, however, that he will have suffered no lasting damage. The stone in the kidney was observed for nine years. There were two different calcifications in this kidney: first, the true stone, as proved by the analysis, and second, the shell-like calcification in the upper calyx, probably chalklike solidifications of caseous material. Whether the increase in the blood pressure can be attributed to this kidney (so-called Goldblatt phenomenon) is an open question. Yet it must be noted that the pressure returned to normal postoperatively.

In the second case we missed the diagnosis and obtained it only after pathologic examination of the tissue. The absence of ordinary bacilli was attributed to the previous treatment with achromycin. The only clue that could have directed our thoughts to tuberculosis was the shell-like appearance of the lower calyx in the pyelogram.

It is this problem of diagnosis with which Couvelaire and Brizon were confronted, just as we were in the second case. Let us consider all the factors these authors bring up as helpful in diagnosis:

1. Radiologic differentiation between true stones and calcification of caseous matter. The stones appear more regular, are solid and need not be located in the tuberculous lesion proper.

2. The presence of persistent cystitis, which normally is not connected with renolithiasis.

3. The presence of tuberculosis in other organs, which, however, in these authors' extensive material, was proved in only 2 cases.

4. Constant and repeated search for the Koch bacillus in all cases.

5. The discrepancy between the size of the stone and the cavity in which it is *located.*

6. The "beaded" ureter, particularly if it is also affected by stricture.

If we apply these factors to our cases, we find that Points 4 and 5 are especially helpful.

In their comprehensive paper, the authors mention forms of lithiasis and tuberculosis that we may encounter here only rarely. All the more, however, should we familiarize ourselves with the problems they encountered in the management of bilateral renal tuberculosis with simultaneous bilateral lithiasis. Some of the patients were admitted with anuria. One interesting aspect is the appearance of stones in the opposite kidney in cases of tuberculosis of the bladder and adnexae (male and female patients). The authors consider this caused by reflux through the impatent orifice and consequently talk about "reflux lithogène."

As to the therapy, this, of course, depends on the degree of destruction, and their advice ranges from partial nephrectomy and speleotomy (when the lesion is in the middle calyx) to total nephrectomy.

In case of contraction of the bladder with either reflux or contraction of the ureter, individualization from ileocystoplasties to ureteroileoplasties and cutaneous ureterostomies is advised. The bad results of implantation of tuberculous ureters into the colon, however, make them give the reluctant advice to transplant only ureters that do not drain tuberculous infected urine. This is easier said than done.

The most interesting problem in these cases, however, is the question: What was first, the tuberculosis or the stone? To this Couvelaire and Brizon give no answer except in the cases of reflux lithogène. Are either the stones or the tuberculosis incidental to each other, or is there interdependence? In our search for an answer we found one paper that may throw some light on this question. Gouygou observed, on thorough and methodical histologic examination of kidneys and other organs afflicted with tuberculosis, *microscopic* calcifications which he called "phyllolithes."

The origin seems twofold: 1. They can form in small blood vessels (interlobular) and can completely obstruct them. They show concentric calcifications that appear, on section, leaflike (hence their name). The adventitia and media are infiltrated with round cells; the intima has disappeared. This is definitely the rarer form.

2. The second type is absolutely similar in construction, but it is more common. It is related directly to active tuberculous lesions, and according to the details of this paper, is represented by giant cells in transitional form, from necrosis to retraction, leaving cytoplasmic strands that unite them to the syncytium of epitheloid cells around them. In this, calcium deposits occur in the form of a basophilic layer. At this stage pyknotic calculi may well be observed. Later they disappear and new lamellae of calcium form.

The total incidence of phyllolithes in cases of renal tuberculosis was 20 per cent.

Assuming it as reasonable that such a phyllolith, which evidently is made up of two substances of variously intense basophilic calcium content, can become the nucleus for deposition of any crystalline substance, in our cases predominantly calcium oxalate, then we should have to say that in some cases the renal tuberculosis doubtless precedes stone formation. In others a stone may form first, and the tuberculosis is incidental to the nephrolithiasis.

There is one other etiologic problem to be considered, as is brought out by Vincent and Pelot. These authors have observed that strictures, intrarenal or in the ureter, as they can develop under prolonged medical treatment, may become a factor in the formation of a calculus. The possibilities for their development are even greater when there exists a secondary infection. Both authors report cases of clinical, radiologic and bacteriologic immediate cure. Later, however, strictures became pronounced; stone formation followed, and secondary infection made nephrectomy necessary. In Pelot's case the pathologist discovered formerly unobserved cavitations. This prompted the author to say a word of caution as to what should be the criteria of cure. If a tuberculous kidney treated medically seems radiologically and clinically cured and still can have hidden cavities, then one should search for still more accurate diagnostic procedures. Perhaps arteriographic study would be helpful.

Another point to be considered is this: Before the discovery of specific antituberculosis drugs, patients were treated, according to Charpy, with large doses of Vitamin D and calcium. As is now known, this can cause tubular calcifications. Although this treatment was never used widely in the United States, it may be a factor to be considered in dealing with patients who come from abroad.

Seven to 35 per cent of patients with pulmonary tuberculosis are reported to have renal tuberculosis also. When one considers that these patients were, before the antibiotic era, bedridden for months and sometimes years, it is astonishing that we were unable to find reports on stone formation. Recumbency and infection should have provided an ideal preconditioning for lithiasis.

As to therapy, there was no possibility of saving the kidney in our first case. Whether this possibility existed nine years earlier we do not know, and we have serious doubts.

In the second case the patient required preservative operative therapy even if we had made the correct diagnosis preoperatively. Of course, we would have subjected this patient to prolonged preoperative chemotherapy. It is clear that the exclusively medical treatment of tuberculosis, in the presence of stones, will never succeed. Removal of the calculus in one form or another, as outlined by Couvelaire and Brizon, is a prerequisite to successful postoperative medical treatment of tuberculosis. Without the discovery of streptomycin, all tuberculous kidneys in such cases would have to be sacrificed.

Even if the number of cases in which conservative operation is indicated and offers hope is still small, as outlined by Lattimer, Nesbit and MacKinney, further improvement of medical as well as surgical therapy will widen the indications.

It is in this light that we wish to report a successful operation as developed and advocated by Puigvert.

Mrs. D. S., aged 27, was admitted to the hospital on April 14, 1952.

Her father had undergone an operation for kidney stone; otherwise her family history was irrelevant.

She had one child and had been well until one and a half years prior to admission. Vague pain then developed in the right flank, lasting for a few days and recurring about every two or three months. In her home town the tentative diagnosis of nonopaque calculus was made. Several cystoscopic procedures were done, with no positive results. Five weeks before she was referred to us, however, she had her first severe attack of right renal colic, with bloody urine. Another one followed forty-eight hours before admission, this time associated with chills, fever, nausea and vomiting. Frequency of urination was present (every two or three hours day and night).

Physical Examination.—On admission the patient was pale but well nourished, with an asthenic body type. She weighed 115 pounds (52.1 Kg.). The temperature was 36.5 C. The blood pressure in millimeters of mercury was 120 systolic and 80 diastolic.

Laboratory Data. — There were 4,000,000 erythrocytes and 11,700 leukocytes per cubic millimeter of blood. A differential count revealed 79 per cent neutrophils, 19 per cent lymphocytes and 2 per cent large monocytes. Chemical tests of the blood revealed normal values. Urinalysis revealed a *p*H of 4.5, a trace of albumin and no sugar. There were many white blood cells and a few epithelial cells per high power field. The electrocardiogram was normal. A roentgenogram of the chest showed enlarged hilar shadows on the left, but was otherwise normal. Bacteriologic study showed gram-positive cocci and no tubercle bacilli.

Upon palpation, one could feel a tender, *nonmotile mass in the right upper abdominal* quadrant. There were flank tenderness and some ballotement on bimanual examination. The rest of the physical examination revealed no abnormality. Observations at vaginal examination are included in the cystoscopic report.

The clinical diagnosis was infected hydronephrosis, right, with or without calculus.

The patient presented an intravenous pyelogram taken in another hospital two weeks prior to admission, which showed a normal genitourinary tract on the left side. On the right side there was general enlargement of the kidney. The pelvis was moderately enlarged, the calyces blunted. The ureter was enlarged, but the lumen was smoothly outlined. There was an obstruction in the ureterovesical junction, and the emptying time was lengthened considerably (Fig. 3*A*).

Cystoscopic study on April 15 revealed the urine obtained from the bladder to be clear and yellow. The anterior and posterior portions of the urethra were normal. The bladder and the left ureteral orifice were normal. The striking observation in this case was the area around the right ureteral orifice. There were bulging granulomatous masses which gave it the appearance of a mulberry. The orifice itself was not visible. By simultaneous examination from the vagina, a wormlike mass corresponding to the orifice was palpated. The mass could be moved by the finger and no doubt corresponded to the thickened ureter.

Indigocarmine appeared promptly and in good concentration on the left side. There was no visible expulsion of urine from the right orifice, and no dye appeared during a twenty-minute observation. No ureteral catheter could be passed on the right side.

Since we could have been dealing with a specific or nonspecific granulation tumor as well as with a malignant growth, we decided to take the risk of a biopsy.

Vaginal examination showed a normal cervix. Bimanual examination revealed nothing abnormal except the aforedescribed wormlike structure.

The pathologist's diagnosis of the biopsy was "inflammatory overgrowth from the bladder."

The preoperative diagnosis was granulation tumor on the lower end of the right ureter, possibly caused by a nonopaque stone or specific inflammation (tuberculosis).

In either case we were convinced that removal of the obstructive end of the ureter should be attempted. The absence of cavitation in the kidney and the obstruction in the upper portion of the ureter would make it a good prospect for the so-called Puigvert operation in case tuberculosis could be verified.

On April 18 the ureter was exposed by a right hockey-stick type of incision beginning above the os pubis and running up the right border of the rectus muscle. The ureter was thickened but easily freed where it crossed the iliac vessels. The closer we came to the bladder, the denser were the adhesions. The ureter was freed and resected out of the bladder, with the whole of the granulation tumor. The healthy bladder was closed. About 4 cm. of the ureter was resected. The pathologist opened the specimen, which had an extremely narrow lumen in the orificial area and a thickened wall proximal to it. No stone was seen. A frozen section was reported as "inflammatory tissue."

The uppermost corner of the bladder was then freed and opened. An oblique channel was made by means of a Moynihan clamp, and the ureter was pulled into the bladder. There was fortunately enough of it to leave a good nipple-like protrusion in the bladder. The implanted ureter was secured to the bladder wall with a No. 000 chromic catgut suture through the thickened ureteral wall and bladder. A T-drain was used as a splint; a Penrose drain was placed in the field of operation, and a Foley catheter was used to drain the bladder.

The immediate postoperative course was good. Three days later we received the report from the Department of Pathology:

"*Gross:* The specimen consists of the lower portion of the ureter, about 3.5 cm. in length. It is slightly pinkish gray. The outer surface is smooth, with some areas of hemorrhage. The internal aspect is granular. Upon section there is a small, firm mass on the lower end.

"*Microscopic:* Section shows a large mass of tissue from the ureter, with the mucosa almost completely absent and replaced by a thick layer of inflammatory tissue. Near the surface this tissue consists of granulation with fibroblastic proliferation and considerable infiltration by lymphocytes, large wandering cells and plasma cells. Throughout the wall of the ureter, however, there are large areas showing granulomatous inflammatory reaction, with many miliary granulomas and numerous confluent and conglomerate inflammatory areas, some of which have central caseous necrosis. They show typical giant cells of the Langhans type, with large masses of epitheloid cells, lymphocytes and some pus cells. In some areas masses of inflammatory granulomatous tissue is seen just beneath the surface. In other areas, where some of the intact mucosa is still present, the inflammatory granuloma is undermining and apparently replacing the overlying mucosa. Diagnosis: tuberculous ureteritis."

After we received this diagnosis we immediately removed the T-drain and the Penrose drain from the wound (April 23). Treatment with streptomycin, 1 Gm. daily, and Nidrazid, 250 mg., was started immediately.

There was a small amount of urinary drainage from the wound, which subsided within ten days. The wound healed solidly thereafter. The Foley catheter was removed on the fourteenth day.

Urine taken before medical therapy was started showed, now that the right kidney was open, positive results from culture for tuberculosis. The patient improved and was discharged on May 11.

Therapy was continued as in the hospital for three months.

Several cultures and guinea pig inoculations gave negative results after May 2.

The patient gained weight gradually, and the urine cleared. In September the catheterized urine was clear, with a *p*H of 7 and no albumin or sugar. The urobilinogen content was normal microscopically. Leukocytes were rare, erythrocytes very rare and few clumps observable.

The tenderness in the right flank disappeared slowly. The renal mass is still palpable, though no longer tender.

An intravenous pyelogram was taken every six months, alternating with check cystoscopic procedures, until 1955, when she moved. The urine remained clear and completely normal after 1954. There was one incident of acute cystitis, which responded easily to sulfa therapy.

At the last cystoscopy, on April 6, 1955, the bladder was entirely normal. There was clean scar tissue where the original orifice on the right side was removed. The neostomy was visible in the uppermost right corner of the bladder. It had a small proximal lip but was otherwise of the golf-hole type. Indigocarmine appeared in four minutes bilaterally, but in slightly reduced concentration on the right side as compared with the left one. No. 5 ureteral catheters were easily inserted bilaterally. The urine from both sides was clear and normal both microscopically and bacteriologically.

The retrograde pyelogram showed a normal kidney and ureter left. On the right there was slight blunting of the calyces. The pelvis and the ureter were normal. There was bilateral normal descensus of the kidney in the upright position, remarkable in view of the original fixation of the right kidney (Fig. 3*B*).

A cystogram was taken, 400 cc. of 2 per cent sodium iodide being employed. There was reflux on the right side. This fact explains the occasional flank pain on urination reported by the patient.

Early in 1958 she telephoned to report that she was pregnant. We advised her to "go through with it." The obstetrician was informed, and she was frequently examined. The pregnancy was entirely uneventful. On Sept. 15, 1958, she was delivered of a healthy girl. Urinalysis after delivery gave entirely normal results. The pyelogram was unchanged (Fig. 4).

COMMENT

Originally (in 1941) Puigvert was convinced that stenosing lesions of the juxtavesical portion of the ureter acted as a barrier against ascending infection of the opposite kidney. He considered it a postoperative lesion and secondary to a residual specific cystitis. Radiologically speaking, he emphasized the sausage type of dilatation of the ureter either with one stenotic area distally located or one higher up, just juxtapyelonically. Originally he tried to dilate the stricture but was not successful, so he came eventually to advise resection and reimplantation of the juxtavesical ureter.

Couvelaire and his collaborators had the same idea as Puigvert. They put more emphasis—and hope—on dilation to create free drainage and give medical therapy a chance. They are aware, however, of the dangers of failure and particularly of secondary infection, which can be induced by dilation. This has caused them to give more consideration to Puigvert's operation.

As to the stenosis in the higher segments and replacement of the ureter with gut, they express the opinion that it is still too early to comment further, but that "one has to weigh the incertitudes and dangers of such an operation against the certainty of a cure by nephrectomy."

In this connection, Obrant has brought out some interesting observations and ideas. In his opinion, early ureteral dilatation may be toxine-induced. It is difficult to decide, however, whether such a condition does not already indicate early mucosal tuberculosis. So far the only sign that a stricture is tuberculosis-induced, beyond the bacteriologic observations, is the progress of the stricture itself. It is Obrant's opinion that tuberculosis of the surfaces, pelvis, ureter and bladder heals faster and better than do the parenchymatous lesions of the kidney and that, therefore, an attempt at dilation is justified. We know, however, the problematic aspects of this theory, particularly in reference to the pathogenesis of renal tuberculosis.

There is no doubt that free drainage is a prerequisite to success with medical therapy. The sooner this drainage is established, the better. The operation of Puigvert, therefore, seems preferable, particularly since the operative risk is smaller than the danger of losing a kidney by perforation of the ureter or secondary infection, which has been reported as occurring after dilation.

The limitation placed on this operation by Fey in 1952, namely, the presence of normal bladder capacity, seems no longer valid, since we have learned to enlarge the bladder by anastomosis to ileal loops. The other limitation, namely, restriction of the procedure to patients with low ureteral stenosis, will probably have to stand for a while, until we have gathered more experience with healing and a technic of ureteroileoplasty or pelvoileoplasty to replace a tuberculous ureter that contains multiple strictures in the presence of a kidney that seems salvageable with medical treatment. And there is always the possibility of discovery of chemicals and antibiotics more effective than those which are available at present.

In a recent paper, Moonen gave excellent and encouraging examples of the use of ileal loops and temporary cutaneous ureterostomy in surgical treatment of the tuberculous ureter. He has also offered similarly illuminating demonstrations of bladder replacement or enlargement and of Puigvert's operation.

RÉSUMÉ

Deux cas sont décrits, présentant une calculose rénale avec tuberculose concomitante. Dans l'un d'eux le rein a pu être conservé, la guérison ayant été obtenue par intervention chirurgicale conservatrice et thérapeutique médicale. Les problèmes étiologiques soulevés par cette double affection sont discutés.

L'auteur présente encore un cas où l'opération de Puigvert a été pratiquée avec succès. Il fait une analyse de la littérature quant aux indications, aux résultats et aux limites de cette opération.

ZUSAMMENFASSUNG

Es wird ueber zwei Faelle berichtet, bei denen Nierensteine und Nierentuberkulose gleichzeitig vorlagen. Es gelang, eine Niere zu retten und durch konservative chirurgische Massnahmen und medizinische Behandlung eine Heilung zu erzielen.

Aetiologische Fragestellungen hinsichtlich einer Verbindung der gleichzeitig bestehenden Steinerkrankung und Tuberkulose werden eroertert.

Ein Fall wird mitgeteilt, in dem die Puigvertsche Operation mit Erfolg ausgefuehrt wurde. Es wird ein Ueberblick ueber das Schrifttum mit Hinsicht auf die Vorbedingungen, die Aussichten und die Beschraenkungen dieser Operation gegeben.

RIASSUNTO

Vengono riferiti due casi in cui la tubercolosi era associata alla calcolosi del rene Fu possibile salvare un rene e ottenere la guarigione mediante un intervento chirurgico conservativo e la terapia medica. Vengono discussi i problemi relativi alla coesistenza delle due affezioni.

Viene presentato un caso in cui si eseguì con successo l'intervento di Puigvert e rivista la letteratura su questa operazione.

SUMARIO

Apresenta dois casos em que coexistem calculos e tuberculose. Conseguio salvar um rim pelo tratamento medicoe terapeutica cirurgica conservadora. Discute os problemas relativos a coexistencia dessas afecções e apresenta um caso em que a operação de Puigvert foi realisada com sucesso. Faz uma revisão da literatura explanando o pre operatorio, indicações e limitações do metodo cirurgico.

RESUMEN

Se presentan dos casos de coexistencia de cálculos y tuberculosis. Es posible salvar un riñón y obtener una curación mediante una intervención quirúrgica conservadora y terapéutica médica.

Se discute tambien el problema etiológico tales como éste de la coexistencia de tuberculosis y litiasis.

Se presenta un caso en el cual se llevó a cabo con éxito la operación de Puigvert. Se revisa la literatura para definir bien las limitaciones y problemas de esta operación.

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Obstetric and Gynecologic Surgery

Arborization of the Cervical Mucus: Its Assessment by the Fern Test

ALFRED STERN, M.D., F.A.C.O.G., F.I.F.A., F.I.C.S.

OAKLAND, CALIFORNIA

Arborization of phlegm and other substances is a chemical process of crystallization. It occurs in the mucus of the uterine cervix merely while the cervix is being conditioned by estrogen. The presence or absence of arborization as shown by the fern test therefore permits conclusions with regard to hormone levels and the condition of the cervix (Zondek's "dysmucorrhea").

The fern test has been applied in a large series of clinical cases. It contributed to the understanding of these cases in the following instances:

1. In cases of menstruating sterility, the occurrence and time of ovulation was investigated.

2. In cases of amenorrhea, the hormonal background was studied.

3. In cases of uterine fibroids and ovarian cysts (including persistent follicle) intrauterine and extrauterine pregnancy could be ruled out.

The observations and conclusions are analyzed. They signify that the uterine cervix is an organ of high functional importance.

THE mucus of the uterine cervix, when spread over a slide and seen under the microscope, will present itself in one of the two structures depicted in Figs. 1 and 2. Either it will be amorphous, intermingled with epithelial cells of the cervix and leukocytes (Fig. 1), or it will have crystallized into the picturesque form named "fern" or "palm leaf (PL)" pattern (Fig. 2). The latter process is called *"arborization."*

The absence or presence of arborization permits immediate conclusions of scientific and clinical value. The test to show absence or presence of arborization is called the *"fern test"*; it is easy to perform at the office. Mucus is drawn from the cervical canal with a suction pipette or a heated platinum loop; spread thinly on a slide without stain, it dries and within a few minutes becomes ready for microscopic inspection.

This phenomenon and the procedure were first described in 1946 by Papanicolaou. Other American, French and Scandinavian investigators, and during the past few years especially B. Zondek, have thrown much light on their significance.

The process of arborization represents a form of crystallization. Identical formations can be produced by the same treatment by using protein (even amino acids) or carbohydrate solutions as long as certain electrolytes are present. The electro-

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Submitted for publication Sept. 5, 1957.

SUMARIO

Apresenta dois casos em que coexistem calculos e tuberculose. Conseguio salvar um rim pelo tratamento medicoe terapeutica cirurgica conservadora. Discute os problemas relativos a coexistencia dessas afecções e apresenta um caso em que a operação de Puigvert foi realisada com sucesso. Faz uma revisão da literatura explanando o pre operatorio, indicações e limitações do metodo cirurgico.

RESUMEN

Se presentan dos casos de coexistencia de cálculos y tuberculosis. Es posible salvar un riñón y obtener una curación mediante una intervención quirúrgica conservadora y terapéutica médica.

Se discute tambien el problema etiológico tales como éste de la coexistencia de tuberculosis y litiasis.

Se presenta un caso en el cual se llevó a cabo con éxito la operación de Puigvert. Se revisa la literatura para definir bien las limitaciones y problemas de esta operación.

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It has been my experience through the years and increasingly so that to instil optimism and a cheerful outlook on physical ills is very helpful both in treatment and in prognosis. The raising of the morale has a favorable physiological effect in itself and, I am certain, tends to counteract some of the harmfulness resulting from the so-called alarm reaction. A cheerful outlook is often fully justified if added to the medical or surgical measures that are being carried out, and it may be the one additional factor that turns the tide and wins the battle.

—*White*

Obstetric and Gynecologic Surgery

Arborization of the Cervical Mucus: Its Assessment by the Fern Test

ALFRED STERN, M.D., F.A.C.O.G., F.I.F.A., F.I.C.S.

OAKLAND, CALIFORNIA

Arborization of phlegm and other substances is a chemical process of crystallization. It occurs in the mucus of the uterine cervix merely while the cervix is being conditioned by estrogen. The presence or absence of arborization as shown by the fern test therefore permits conclusions with regard to hormone levels and the condition of the cervix (Zondek's "dysmucorrhea").

The fern test has been applied in a large series of clinical cases. It contributed to the understanding of these cases in the following instances:

1. In cases of menstruating sterility, the occurrence and time of ovulation was investigated.

2. In cases of amenorrhea, the hormonal background was studied.

3. In cases of uterine fibroids and ovarian cysts (including persistent follicle) intrauterine and extrauterine pregnancy could be ruled out.

The observations and conclusions are analyzed. They signify that the uterine cervix is an organ of high functional importance.

THE mucus of the uterine cervix, when spread over a slide and seen under the microscope, will present itself in one of the two structures depicted in Figs. 1 and 2. Either it will be amorphous, intermingled with epithelial cells of the cervix and leukocytes (Fig. 1), or it will have crystallized into the picturesque form named "fern" or "palm leaf (PL)" pattern (Fig. 2). The latter process is called *"arborization."*

The absence or presence of arborization permits immediate conclusions of scientific and clinical value. The test to show absence or presence of arborization is called the *"fern test"*; it is easy to perform at the office. Mucus is drawn from the cervical canal with a suction pipette or a heated platinum loop; spread thinly on a slide without stain, it dries and within a few minutes becomes ready for microscopic inspection.

This phenomenon and the procedure were first described in 1946 by Papanicolaou. Other American, French and Scandinavian investigators, and during the past few years especially B. Zondek, have thrown much light on their significance.

The process of arborization represents a form of crystallization. Identical formations can be produced by the same treatment by using protein (even amino acids) or carbohydrate solutions as long as certain electrolytes are present. The electro-

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Submitted for publication Sept. 5, 1957.

lytes (sodium or potassium salts) are indispensable. The fern pattern can constantly be demonstrated on the contents of ovarian cysts and on any kind of body mucus, e.g., nasal secretion.

In the cervical mucus, however, arborization is not always present. It is predominant during the seventh to seventeenth days of an average cycle of twenty-eight days or, better, during the estrogen-dominated part of the cycle (Fig. 3). The estrogen causes the healthy cervix to produce the electrolytes which are indispensable to chemical completion of the arborization process. Arborization, therefore, is absent during the postmenstrual days, owing to the lack of estrogen (*B1*, Fig. 3) ; it is absent again during the postovulation (premenstrual) days, because progesterone inhibits the estrogen (*B2*, Fig. 3). The nonarborizing mucus (Fig. 1) is inimical to the survival of sperm.

Knowledge of the dependence of arborization on hormones enables the investigator to use the fern test in biologic tests of hormones.

Estrogen can be traced and titrated by the appearance of arborization after injection into a female subject without ovarian function. This procedure is simpler than the Allen-Doisy test on castrated rats and certainly less involved than endometrial biopsy. Moreover, it seems to be more sensitive.

Progesterone can be measured by its prevention of the estrogenic arborization effect. It requires fifteen times the amount of progesterone to inhibit the effect of 1 mg. of estrogenic substance.

Androgen is known to oppose estrogen in some instances (e.g., masculinization vs. femininization) and parallel estrogen in others (e.g., effect on bone metastases of mammary carcinoma). In the case of arborization, androgen works parallel to estrogen but is much weaker; up to one thousand times the amount is needed, because merely a small fraction of androgen seems to be converted into estrogenic substance.

Practicing clinicians have found the fern test helpful in diagnosis and in the planning of treatment of ovarian disorders. Following their reports I have applied the test in a large series of patients. The method has aided greatly in the analysis and the handling of the following problems.

The Question of Ovulation in Cases of Menstruating Sterility.—Just as the male partner of a sterile couple is first subjected to sperm tests before any major therapeutic procedure is applied to him, so the sterile woman should not be exposed to any surgical attack before it is determined whether or not she ovulates. The woman who bleeds every four weeks does not necessarily ovulate.

Whether she does can be shown by different tests. Endometrial biopsy during the premenstrual period permits differentiation between ovulatory and anovulatory cycles; however, it involves minor surgical measures. The basal temperature charting is a less traumatic method, but it presupposes two months of reliable, intelligent cooperation by the patient herself.

The fern test eliminates these two hazards. Arborization during the second week of the cycle, followed by the absence of arborization during the fourth week, indicates that the early estrogenic arborization effect (+, Fig. 4) has become inhibited by the progesterone action of the corpus luteum resulting from ovulation (—, Fig. 4). This pattern proves ovulation (Fig. 4*A*).

It is obvious that a late negative test result alone cannot be conclusive evidence of inhibition, since one must demonstrate first, by the earlier positive test result, that there was something to inhibit.

A negative result from a fern test made

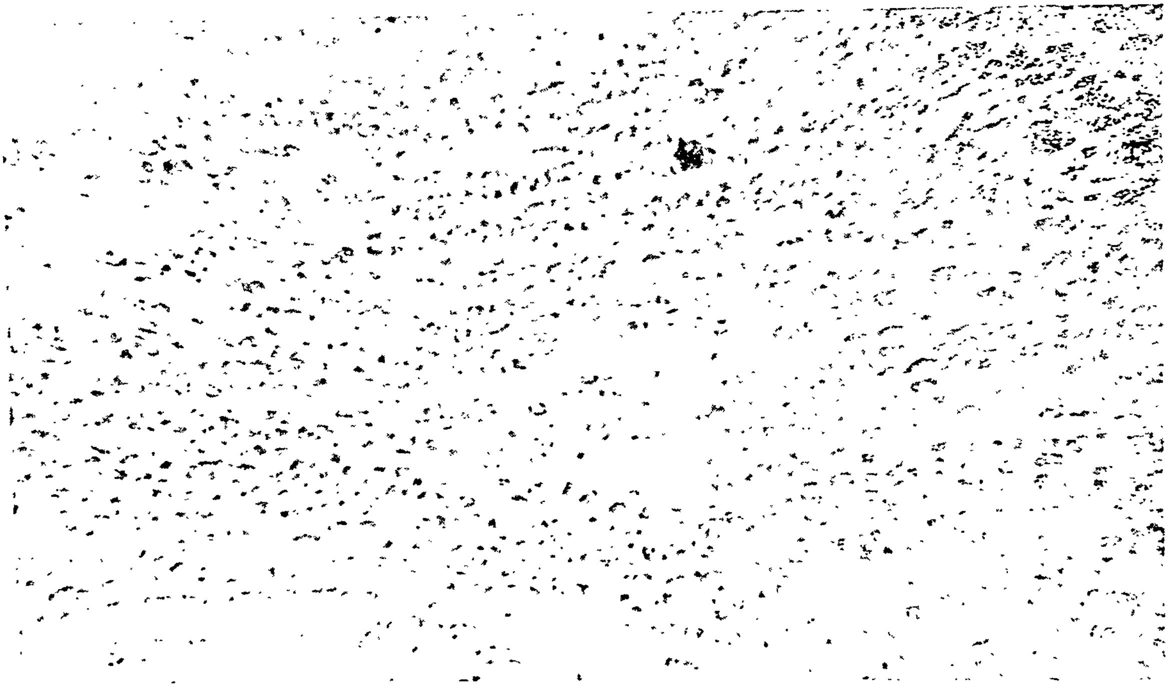

Fig. 1.—Cervical mucus; amorphous form, intermingled with epithelial cells of the cervix and leukocytes.

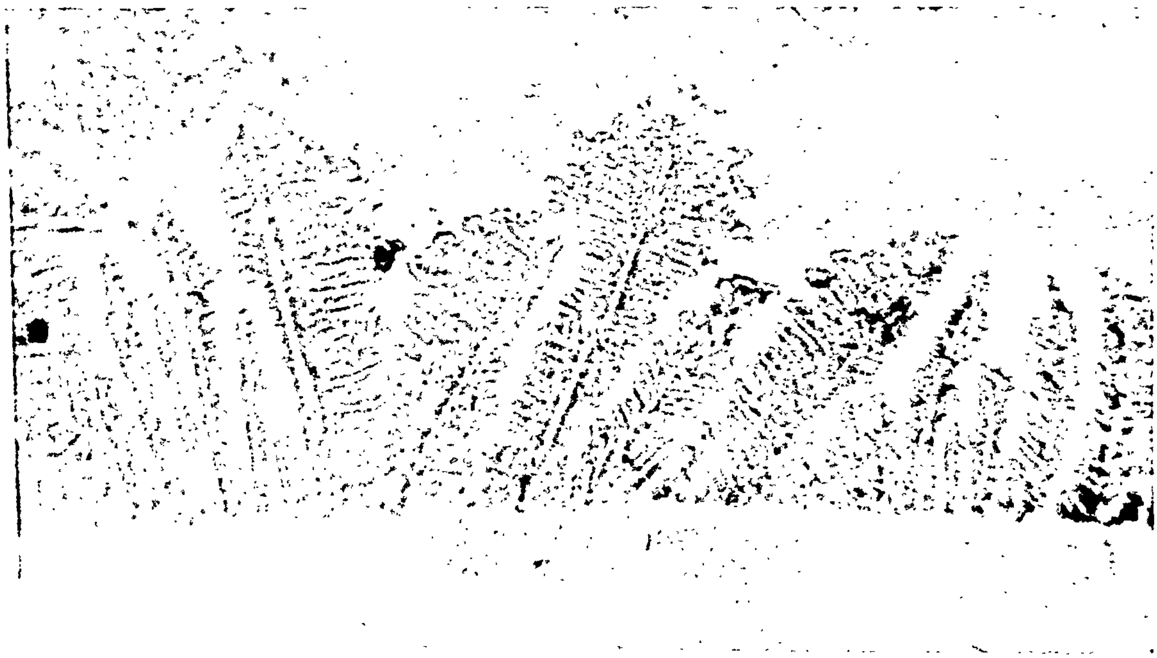

Fig. 2.—Cervical mucus crystallized into "fern" or "palm leaf" pattern (arborization).

early, during the second week of the cycle (Fig. 4*B*), would indicate that no estrogenic substance was ever formed or that it was formed but incapable of inducing a *diseased cervix* to produce the electrolytes needed for arborization. To the latter

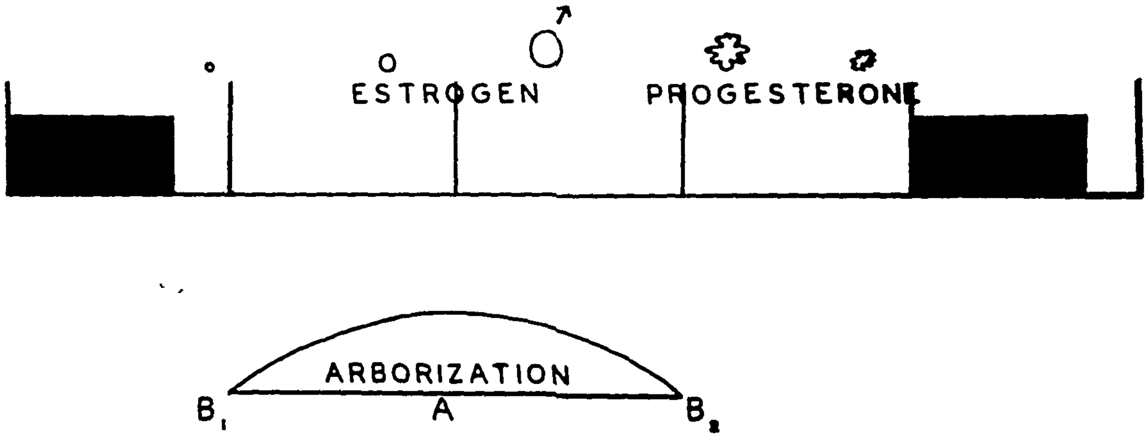

Fig. 3.—Schema showing predominance of arborization during estrogen-dominated part of cycle.

entity B. Zondek has given the name of "*dysmucorrhea.*" Dysmucorrheic patients need cervical treatment, not hormones.

If the two fern tests during the cycle both yield positive results (Fig. 4*C*), it becomes apparent that not enough progesterone was produced to inhibit arborization premenstrually. No progesterone means no corpus luteum formation; no corpus luteum formation signifies absence of ovulation. The patient almost surely has had an anovulatory cycle. Women who do not ovulate need to be treated differently from women who do ovulate but do not conceive.

Determining the time *when* a woman ovulates may permit useful marital advice or corrective hormone therapy in case of disturbance. The fern test gives merely an approximate answer as to the day of ovulation. Ovulation must have occurred several days before the corpus luteum has turned the result of the fern test negative. Biologic variations do not permit a more definite timing.

Study of the Hormonal Background in Cases of Amenorrhea.—Failure of the female organs to produce menses can have various causes. The fern test contributes to their differentiation.

If an amenorrheic woman consistently presents a negative reaction to the fern tests, the absence of arborization proves the absence of estrogen (Fig. 5*A*). Her case has to be followed up in the light of the missing estrogenic hormone and the consequent absence of endometrial proliferation.

Rudimentary arborization is observed occasionally in amenorrheic patients. This may indicate an inadequate supply of estrogen: enough for the sensitive cervix to produce electrolytes and therefore the trace of a fern pattern, but insufficient for the less sensitive uterus to build up the proliferative endometrium.

Normal fern test patterns—positive before and negative after ovulation (Fig. 4*A*)—in amenorrheic women indicate normal production of ovarian hormones; in these cases the amenorrhea is the result of local endometrial disease (e.g., endometritis or tuberculosis).

If the results of fern tests in an amenorrheic woman consistently turn out positive, then the marked arborization indicates an excessive supply of estrogenic substance. Cases of persistent follicle belong here, in which an unruptured graafian follicle keeps on producing estrogen while the progesterone-directed secretory phase of the cycle never occurs (Fig. 5*B*). Obviously in these cases of amenorrhea the patient needs different treatment from that required by a patient with the type of amenorrhea presented in Figure 5*A*.

Exclusive of the Diagnosis of Pregnancy.—Under the study inhibitory influence of the corpus luteum of pregnancy the cervical mucus of a pregnant woman cannot show arborization (Fig. 6). This obvious and logical fact was responsible for the occasional announcement that the negative fern test result could be used for the early diagnosis of pregnancy. So much was never claimed by the originators of the test, who recognized the fact that pregnancy is merely one of several conditions associated with constantly negative results from the fern test. The menopause or the type of amenorrhea demonstrated in Figure 5*A* will also show continuous absence of arborization.

The latter two conditions are fern-negative because of the absence of estrogen. Injection of estrogen turns the reaction fern-positive within a few days. This does not work in pregnancy: estrogen injec-

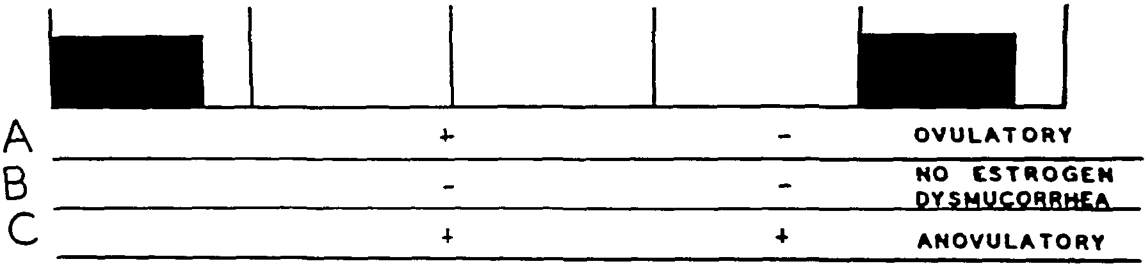

Fig. 4.—Schema illustrating application of fern test to differentiation between ovulatory and non-ovulatory cycles.

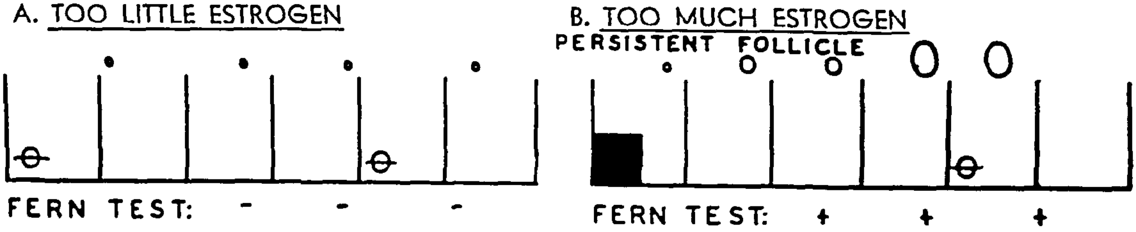

Fig. 5.—Schema of two types of amenorrhea caused by different kinds of hormone imbalance. *A*, results of fern test when there is too little estrogen; *B*, results when there is too much estrogen.

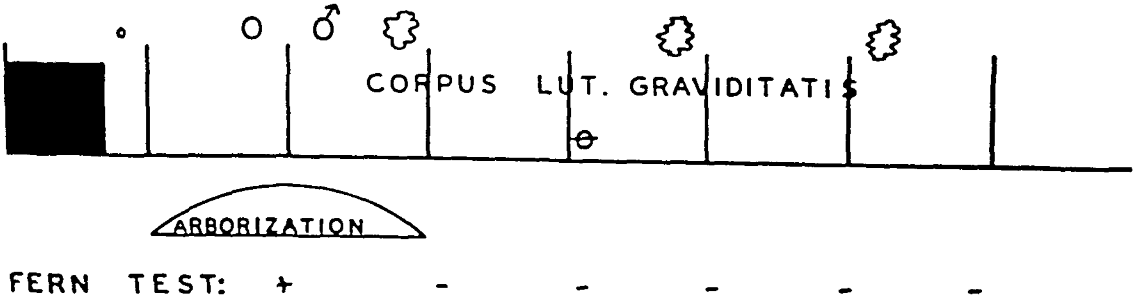

Fig. 6.—Schema showing inhibitory effect of corpus luteum of pregnancy on arborization.

tions do not result in the fern pattern, since the cervix of the pregnant uterus is incapable of producing the electrolytes needed for arborization. The ready conclusion that progesterone of the corpus luteum of pregnancy bars electrolyte production has been proved incorrect; electrolytes, and consequently the fern pattern, are not formed either late in pregnancy or in cases of missed abortion, when no progesterone circulates. It appears that the inhibiting effect upon the cervix is produced by placental secretion.

The role of the placenta is shown by further observations. Zondek obtained slightly positive results from the fern test in some exceptional cases of pregnancy; all these cases ended in miscarriage. Zondek concluded that in such cases some placental disturbance results in failure to affect the cervical electrolyte chemical picture and in failure to maintain the pregnancy. It is therefore permissible to deduct from a slightly positive fern reaction during pregnancy the suspicion that this pregnancy may be disturbed.

Real, solid arborization of the cervical mucus has never been reported as observed during pregnancy. A clearly positive fern test result, therefore, rules out pregnancy. It is here that the fern test gains diagnostic importance: in the differentiation between pregnancy and fibroid of the uterus, arborization *rules out pregnancy* and tips the scale toward fibroid. In the differential diagnosis between tubal (unruptured and unaborting) pregnancy and ovarian cyst or persistent follicle, arborization rules out pregnancy. In conjunction with the remainder of the diagnostic armamentarium, the fern test here has significant practical value.

The simplicity and conclusiveness of the fern test will cause more and more scientific-minded practitioners to study arborization for the analysis of many of their gynecologic problems.

A predictable relation between cervical mucus and general pelvic and endocrine physiologic and pathologic states will impress the observer with the probability that the uterine cervix may have more functions than just to open and close the uterus.

Much active topical therapy has been given to the cervix, which is readily accessible and is not sensitive to pain from cutting and burning. Growing understanding of the functional significance of the cervix will result in a refined therapeutic approach to this organ.

ZUSAMMENFASSUNG

Die baumartige Verzweigung von Schleim und anderen Stoffen ist ein chemischer Prozess der Kristallisierung. Er tritt beim Schleim des Gebärmutterhalses auf, wenn dieser unter dem Einfluss des östrogenen Hormons steht. Das Bestehen oder Fehlen der baumartigen Verzweigung gestattet daher Schlüsse auf den Hormonspiegel und auf den Zustand des Gebärmutterhalses (Zondeks Dysmucorrhoe).

Die Farnprobe ist in einer grossen Reihe von klinischen Fällen angewandt worden und hat in folgender Weise zum Verständnis dieser Fälle beigetragen:

1. In Fällen von Sterilität bei erhaltener Menstruation wurde das Auftreten und die Zeit der Ovulation erforscht.

2. In Fällen von Amenorrhoe wurde der hormonale Hintergrund untersucht.

3. In Fällen von Gebärmuttermyomen und Ovarialzysten (einschliesslich persistierenden Follikels) konnte eine intrauterine, oder extrauterine Schwangerschaft ausgeschlossen werden.

Die Untersuchung der Befunde und der Schlussfolgerungen ergibt, dass der Gebärmutterhals ein Organ von grosser funktioneller Bedeutung ist.

RÉSUMÉ

L'arborisation du flegme ainsi que d'autres substances est un processus chimique de cristallisation. Elle se forme dans le mucus du col de l'utérus alors que le col est conditionné par l'oestrogène. La présence ou l'absence d'arborisation telle qu'elle est démontrée par le test de la fougère, permet donc des conclusions quant aux niveaux hormonaux et à l'état du col (dysmucorrhée de Zondek).

Le test de la fougère a été appliqué à une importante série de cas cliniques. Il a contribué à une meilleure compréhension des cas suivants:

1. Stérilité menstruelle: l'occurrence et le temps d'ovulation ont été recherchés.
2. Aménorrhée: l'état hormonal a été étudié.
3. Utérus fibroïde et kystes ovariens (y compris les follicules persistants) : la possibilité d'une grossesse intra-utérine ou extra-utérine a pu être écartée.

Les constatations, et les conclusions sont analysées. Elles permettent de conclure que le col de l'utérus est un organe he haute importance fonctionnelle.

RESUMEN

La arborización de las sustancias mucosas y otras afines es un proceso químico de cristalización. Suele ocurrir en el moco del cervix uterino, bajo la influencia de los estrógenos. La presencia a ausencia de arborización tal como muestra el test del helecho permite sacar conclusiones en relación con los niveles hormonales y el estado del cervix (dismucorréa de Zondek).

Este test se ha aplicado en una amplia serie de casos clínicos. Contribyó a la mejor comprensión de tales casos en las siguientes circunstancias:

1. En casos de esterilidad con menstruación determina la presencia y tiempo de la ovulación.
2. En casos de amenorrea indica el fondo hormonal.
3. En casos de fibroma uterino y de quistes de ovario (incluyendo folículo persistente) puede determinarse la existencia de embarazo.

Se analizan estos hallazgos y conclusiones. De estos estudios se deduce que el cérvix uterino es un órgano de gran importancia funcional.

RIASSUNTO

L'arborizzazione, che e' un processo chimico di cristallizzazione, si verifica nel *muco della cervice uterina* quando essa e' sottoposta all'azione degli estrogeni. La presenza o l'assenza di arborizzazione, pertanto, consente di trarre delle conclusioni riguardo al livello ormonale e allo stato della cervice (dismucorrea di Zondek).

Il test e' stato applicato in una numerosa serie di casi clinici e si e' dimostrato utile alla diagnosi nei seguenti casi:

1) Nei casi di sterilita' con mestruazioni consente di studiare l'avvento e il tempo dell'ovulazione.

2) Nei casi di amenorrea, lo sfondo ormonale.

3) Nei casi di fibrosi uterinale e di cisti ovarica (compresa la persistenza del follicolo) si puo' escludere la gravidanza intrauterina o diagnosticarla.

Tutti questi fatti dimostrano la grande importanza funzionale della cervice uterina.

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Ophthalmologic Surgery

Fistulizing Operations for Glaucoma: Their Complications

IRVING H. LEOPOLD, M.D., F.A.C.S., F.I.C.S., D.A.B.
PHILADELPHIA, PENNSYLVANIA

THE reasons for failure of fistulizing operative procedures for glaucoma are many. Foremost, of course, is the improper choice of operation. The others are the complications that may occur in the performance of a properly selected procedure, interfering with its outcome.

When a fistulizing procedure is required, the one commonly employed is either the Elliott trephine or iridencleisis. Iridectomy with LaGrange sclerectomy has been employed to a lesser extent. Recently Scheie has introduced a fistulizing operation in which the effect is produced by causing the lips of the scleral incision, made as for a peripheral iridectomy, to retract, by application of the cautery superficially to the wound edges.

These procedures are usually employed in cases of chronic narrow-angle or wide-angle glaucoma and acute attacks of neglected glaucoma, and rarely in cases of aphakic or secondary glaucoma.

The ophthalmologist frequently has difficulty in deciding which of these procedures to use. There is no question that some surgeons are better prepared by experience or training to do one type of procedure with greater facility and dexterity than another. A study of the incidence and type of complications may provide another possible reason for selecting one type of surgical procedure over another.

Complications.—The complications encountered may be divided into those which occur early and those which occur late. The early ones include hyphema, the shallow or flat anterior chamber; vitreous hemorrhage; uveitis; cataract; retraction of the iris pillar when in iridencleisis, and malignant glaucoma. The late complications include uncontrolled tension; progressive visual field loss; cataract; hypotony; upward displacement of pupil;

Various complications, including hyphema, flatness or shallowness of the anterior chamber, malignancy, intraocular infection, cataract, uveitis and uncontrolled pressure, may occur when a fistulizing operation is performed for glaucoma. The author analyzes these complications and their possible causes and reviews his own and other ophthalmic surgeons' experience in the hope that a thorough study of the problem will reduce their incidence significantly.

From the Graduate School of Medicine, University of Pennsylvania, and the Wills Eye Hospital.

Read at the Twenty-Fourth Annual Congress of the North American Federation, International College of Surgeons, Sept. 13-17, 1959.

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Hemorrhage. — Theoretically, hemorrhage may be the cause of failure in these operations for glaucoma. It may favor the development of peripheral anterior and posterior synechiae and cause interference with drainage through the angle. Hemorrhage that occurs at the time of operation can be lessened or eliminated by making the incision with the knife at right angles to the sclera, by the use of the scratch-down incision, by the proper use of pressure by local administration of epinephrine to patients who can tolerate it, and by use of the cautery. There are those who object to the last-mentioned measure, stating that the cautery facilitates the development of fibrosis. It is wise to wait until all wound bleeding has ceased, spontaneously or as a result of these measures, before proceeding with the operation—certainly before entering the anterior chamber. It is not always possible to prevent postoperative bleeding into the eye chambers.

Guyton observed hemorrhage, immediate or delayed, in 29 of the 95 eyes operated on, i.e., 30 per cent. In 78 per cent of those eyes which had hyphemas the tension remains controlled, and 92 per cent of those eyes which did not have hyphema were controlled. These figures suggest that hyphema is detrimental and may cause increased scarring along the fistulous tract and in the conjunctival bed. Scheie encountered hyphema in 8 eyes, or a little over 11 per cent, but expressed the opinion that it did not interfere with the final outcome in any instance.

There are, as yet, no proved methods of speeding up the absorption of the hyphemas. Recent studies by workers at Wills Hospital suggest some favorable influence of intravenously administered plasmin. This requires further investigation before its widespread adoption. Earlier enthusiastic reports for the beneficial effects of trypsin, intramuscularly and buccally administered, have not been confirmed. The series have been too small and the difficulties of clinical control not always overcome. Streptokinase and streptodornase have not been granted widespread clinical adoption for this purpose.

Fortunately most of these intraocular hemorrhages are absorbed spontaneously and rarely require evacuation.

Re-formation of the Anterior Chamber. —The slow re-formation of the anterior chamber is the characteristic feature of most filtering fistulizing procedures for glaucoma. To some extent this can be lessened by meticulous tight closure of the conjunctival wound, with the wound edges crushed together and, if a wound leak is present, perhaps cautery to this site can be helpful. Even with careful attention to wound closure, however, flat anterior chambers are frequent and apparently cannot be prevented by any of the current procedures. If no wound leak can be demonstrated, there is usually no urgency in treating a flat anterior chamber. If, however, iritis is evident and there is no filtering bleb and posterior synechiae are beginning to form, it would seem advisable to trephine in the region of the greater separation of the choroid and fill the anterior chamber with air by the method outlined by Chandler. In Scheie's series of 70 eyes the anterior chamber was formed in three days in 45, in seven days in 18, in ten days in 5 and in two weeks or longer in 2. Only 1 did he treat by injection of air into the anterior chamber. In Guyton's series, when iridencleisis had been performed, shallow or flat anterior chambers were noted in 25 eyes. Tension was controlled in 21 of 23 eyes, or 91 per cent, in which the chamber was shallow or absent, and in 54 of 63 eyes, or 86 per cent, in which the anterior chamber remained adequately formed after the operation. In Guyton's series it would seem that shallow or anterior chambers had little or no effect on the eventual result obtained, In Scheie's series the long delay in the formation of the anterior chamber did not appear to influence the eventual control. Stallard, using his anterior flap sclerotomy with basal iridencleisis, had an incidence of choroidal detachments of about 10 per cent in cases of chronic simple glaucoma and 19 per cent in cases of chronic narrow angle glaucoma, and he considered this the most common complication of this operation. It occurred in about 11 per cent of all patients he operated. He also expressed the opinion that if the chamber were absent for four days or remained very shallow, without increase of depth, for seven days after operation, drainage of subchoroidal fluid and inflation of the anterior chamber with sterile air would be proper, in order to prevent peripheral anterior synechiae and lens opacities.

Cataract Formation. — After glaucoma operations, opacities in the lens may be expected to develop sooner than if no operation had been performed. This tendency increases with the patient's age. This means that one must be particularly aware of this possibility if a patient already has lens opacities, for the surgeon must realize that eventually cataract extraction will have to be done, and therefore should select a procedure or approach for treatment of the glaucoma that will allow a satisfactory lens extraction to be done at a future date.

Cataractous changes that develop a few days after operation are probably due to the surgeon's having inadvertently touched the lens capsule. Certainly this must be true if a mature cataract develops a few days after operation. There is indication that there has been some direct injury to the lens capsule with a surgical instrument. Sometimes this is observed in iridectomy. The site of injury may be visible, or it may be covered and masked by the iris. There is a greater possibility of damaging the lens in a blue-eyed than in a brown-eyed iris, the blue-eyed iris being thinner and affording less protection to the lens. This is true also of the old, senile, fragile iris. Those lens opacities which develop within a few weeks after operation may also be due to an instrument's having struck the lens at the time of operation. Those that develop months or years after operative trauma may still be playing a part, but it is more likely that the altered physiologic character of the eye is the main factor. There is no doubt that postoperative hypotony predisposes to the early development of lens changes. It is this danger of striking the lens that has made many ophthalmologic surgeons switch from the trephine procedure to iridencleisis and, more recently, to the diathermy scleral shrinking technic of Scheie. Procedures that do not necessitate placing an instrument within the confines of the eye have a decided advantage in

TABLE 1.—*Complications of Fistulizing Procedures for Glaucoma*

1. Hyphema
2. Flat anterior chamber
3. Malignant glaucoma
4. Intraocular infections
5. Cataract
6. Uncontrolled pressure
7. Uveitis and others . . .

TABLE 2.—*Summary of Recent Series of Fistulizing Procedures for Glaucoma*

	Iridencleisis	*Anterior Sclerectomy and Basal Iridencleisis*		*Peripheral Iridectomy and Sclerotomy by Diathermy*	
	Haisten & Guyton 1959	*Stallard 1958*	*Mulberger & McDonald 1958*	*Scheie 1959*	*Leopold 1959*
No. of Eyes	95	311	62	70	90
% controlled with (or without) miotics	84%	96%	94%	88%	83%

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There is no doubt that there is something constitutional in the problem; some persons are predisposed to fibrous proliferation. Negroes are more predisposed to this type of fibrosis than are Caucasians. There are those who recommend the separate dissection of Tenon's capsule and the conjunctiva and closure of these two tissues in separate layers. Dunnington and McCulloch, in 1956, suggested that such a closure would provide a watertight seal and prevent leakage of the bleb and delayed re-formation of the anterior chamber. Scheie uses this procedure in his operation and noted a considerable number of slow formations of the anterior chamber. McLean has recommended pulling down Tenon's capsule with sutures so that it forms a fold overlying the trephine area, leaving a gap in the capsule above. Laval, in 1955, recommended the use of Gelfilm, which he placed over an occluded iris to separate it from Tenon's capsule and the conjunctiva. He claims that in this way fibrosis is prevented and a widespread drainage area produced. Experimental data provided by Schimek and his associates indicate that Gelfilm may be a factor in increased fibrosis. Certainly this occurred in their experimental rabbit eyes.

Subconjunctival incision into the bleb is rarely sufficient to cure the condition when the intraocular pressure is not satisfactorily maintained through this fibrotic bleb. McCulloch has had some success with this approach. Stanworth has not.

Sometimes massage helps, particularly if it produces a substantial fall in intraocular pressure and increases the size of the drainage bleb. If miotics maintain the intraocular pressure within normal limits, no additional treatment is indicated. Massage may "work" for several months and then no longer be adequate; the patient, therefore, must be watched carefully. The use of steroids does not seem to have any significant influence on the success or failure of these filtration procedures. Stanworth has been experimenting by deliberately excising a piece of Tenon's capsule around the site of the contemplated filtration as a primary procedure. Friedenwald recommended beta irradiation to prevent scar formation in eyes after fistulizing procedures. Cohen, Graham and Fry observed that this tech-

TABLE 3.—*Operations for Glaucoma: Iridectomy with Cautery to Scleral Wound*

		Controlled				*Re-formation of Anterior Chamber*			
Type of Glaucoma	*No. of Eyes*	*Without Miotics*	*With Miotics*	*With Hypotony*	*Uncontrolled*	*< 7 Days*	*7 Days +*	*Complications*	
Narrow Angle									
Acute	12	10	—	1	1	6	6	Uveitis Hyphema	2 1
Chronic	16	10	2	1	3	7	9	Uveitis Hyphema	1 2
Chronic Simple									
Angle open	21	11	2	2	6	8	13	Uveitis Hyphema Cataract Advanced	3 2 1
Angle narrow	36	24	4	3	5	10	26	Uveitis Hyphema Cataract Advanced	3 3 1
Secondary									
Essential iris atrophy	3	2	—	1	—	1	2	—	
Aniridia	2	2	—	—	—	2	—	—	
TOTAL	90	59	8	8	15	34	56		

this regard. In an effort to avoid this type of lens damage, Chandler has suggested deepening of the angle of eyes with narrow angles prior to doing trephine operations, by injecting saline solution through a slanting corneal incision until the chamber is made deep. The use of a tapering trephine blade would also decrease this possibility. For years it has been stressed that iris forceps should not have posterior teeth or, preferably, should have all teeth removed. One should avoid passing an iris repositor into the anterior chamber, and of course there is always the danger that the keratome point or the knife may strike the lens unexpectedly, particularly as a result of movement on the part of the patient.

Postoperative Elevation of Intraocular Tension.—Within six weeks one usually can determine whether or not intraocular pressure has been satisfactorily controlled by the surgical procedure. There may be no evidence of a bleb or there may be a bleb, but the pressure is not adequate. Analysis of the scleral rigidity will show whether or not this is a contributing factor; usually it is not. It is quite possible, as Sugar has suggested, that this failure of control in the presence of a bleb is due to hypersecretion, but more probably it represents fibrosis within the bleb, which prevents adequate filtration. It is generally accepted that iridencleisis and the other procedures lower the intraocular pressure by creating a fistula through which aqueous can drain to the subconjunctival bleb. Fluid is absorbed from here or may pass transconjunctivally to mix with the tears. Rarely does the tension remain elevated in the presence of an apparently functioning bleb. In such instances, however, the bleb has a thick covering of fibrous tissue that limits its effectiveness. In an occasional case, Guyton has pointed out, the tension is normalized even after iridentomy than after fistulizing operations, but it may occur after either.

Uveitis.—Iritis is not an uncommon complication of fistulizing procedures, and one must watch carefully to be certain that the pupil is well dilated to prevent the development of posterior synechiae in a position that would embarrass the visual acuity of the patient. The use of local steroids and cycloplegics at the proper time will usually control this disorder. Stallard encountered it in approximately 1 per cent of the patients he treated by anterior flap sclerotomy with basal iridencleisis. The experience of my service with the Scheie procedure in 90 eyes was that moderate to severe iritis was encountered in 9.

Sympathetic ophthalmia was not encountered in any of Guyton's series of iridencleises nor in any of Scheie's or Stallard's patients. In 1954 Mackie and Rubinstein reported a review of the literature in which almost 2,000 iridencleises were listed, including 110 in their own series, with sympathetic ophthalmia occurring in only 4 cases, an incidence of approximately 0.2 per cent.

Experience with Iridectomy and Cautery to Scleral Wound Edges.—Over the past two years I have had the opportunity of evaluating the iridectomy with scleral cautery procedure in 90 eyes, and the results are quite similar to those previously reported by Scheie. Hypotony has been encountered, as has delayed formation of the anterior chamber, which at first was quite worrisome, but apparently many of these eyes have done well in spite of the prolonged interval before the chamber was well formed. Uveitis was encountered in 9 cases, necessitating the vigorous use of cycloplegics and steroids in an effort to quiet the inflammation, break the posterior synechiae or prevent their re-formation. Hyphemas occurred in 8 eyes but appeared not to be related to the eyes in which control was not established. The procedure has been used as a secondary operation when other surgical approaches have failed and has been successful. It is interesting that 2 eyes of 2 patients with essential atrophy of the iris have been controlled for six months after this procedure, though in both cases there was failure to respond to prophylactic iridectomy. Two eyes of the same child, with aniridia, responded favorably after poor response to other procedures (Table 3).

SUMMARY

It appears from the study of recent summaries of fistulizing operations for glaucoma, particularly iridencleisis, that the overall results are good for the control of intraocular pressure. Whether one uses Stallard's procedure or the procedure employed by Guyton, the statistics are approximately the same. Those following the Scheie procedure are also similar (Tables 1 and 2). It is apparent that, as in any type of surgery, complications do occur. They are not always the result of poor technic, but they can be due to errors in judgment or to factors as yet unknown and therefore impossible to control. Some patients do poorly; lens changes develop more rapidly in some than in others, the filtering bleb becomes scarred down. In others, hyphemas or uveitis may develop, or there may be delayed formation of the anterior chamber. The complications are so numerous that one hesitates to operate, but if the indications are clear and the patient has a rising base pressure, with evidence of visual field loss, tomographic evidence of unfavorable change and a definite decrease in the facility of aqueous outflow, the ophthalmologist has no choice and must proceed with surgical intervention. Several procedures are available for the control of chronic glaucoma. There is little to choose between them; complications occur with them all. He should emnic improved their results with fistulizing operations performed on Negroes.

Hypotony.—Hypotony has been encountered in all series of fistulizing operations. The tension may be soft from the very beginning of the postoperative period. The blebs may become thin, and the tension remain soft years after the operation. Hypotony undoubtedly favors the development of cataract, and once these opacities have started, correction of hypotony does not stop the progression of lens changes. If one encounters hypotony, attempts to reduce it by cautery of the blebs or other measures may stop filtration to such an extent that the intraocular pressure is no longer controlled. One usually is forced to interfere, however, if the bleb is ruptured, producing a flat anterior chamber, or if there are frequent or annoying changes in refraction. A conjunctival or Tenon's flap can be brought down from above, and this can be anchored to episcleral tissue on each side of the cornea, as suggested by Chandler. A few small cautery points can be placed horizontally near the upper border of the cornea; this is helpful in anchoring the flap to the cornea. Guyton encountered hypotony in only 1 of his 86 operations. Scheie encountered hypotony in 15 patients, or approximately 21 per cent. This is approximately the incidence reported in other series for Elliott trephines, but much higher than that associated with iridencleisis.

Dr. Aguilar Bartolome has stated that phosphoryl choline chloride proved to have value in the treatment of hypotony resulting from lens extraction and trauma. It was ineffective for hypotony following fistulizing operations.

Intraocular Infection. — Late infection after fistulizing operations has been the subject of numerous publications since Wageman's early report in 1913. The estimated incidence varies greatly, according to different authors, from 0.1 to 3.5 per cent. It also varies according to the operation performed, being lowest after iridencleisis than after corneal scleral trephining or the operation of LaGrange. The figures supplied by Kalt and Loisillier are 3.3 per cent after trephining, 6.6 per cent after the operation of LaGrange and 1.4 per cent after iridencleisis. In a total of 464 operations there were 13 cases of late infection (2.8 per cent).

Sugar and Zeckman reviewed the histories of 28 late infections of filtering blebs occurring over the past twenty years. In the majority of the cases the condition resulted from glaucoma operations, trephines showing a higher incidence of late infections than iridencleisis.

Zita, in a ten-year survey of the use of Elliott trephining, noted a high incidence of cataracts and late infections, which in 0.16 per cent resulted in total loss of the eye.

Prophylactic treatment consists of securing a good, thick flap of conjunctiva and Tenon's capsule at the time of operation and of emphasizing to the patient the advisability of seeking advice immediately should there be the slightest sign of inflammatory trouble of the eye or its adnexae. Styes and conjunctivitis should be cultured and specifically treated in all fistulized eyes.

Malignant Glaucoma.—One of the trying situations encountered after glaucoma procedures is forward displacement of the iris lens diaphragm, accompanied by a rise in tension. This is best handled by lens extraction. One can try injection of air into the anterior chamber first, with posterior sclerotomy, but usually lens extraction is necessary. This complication is usually encountered in eyes with narrow angles in which the pressure has not been lowered prior to the operation, yet is more frequently observed after iridectomy than after fistulizing operations, but it may occur after either.

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ZUSAMMENFASSUNG

Eine Untersuchung neuerer zusammenfassender Berichte über fistelbildende Glaukomopertionen, besonders die Iridencleisis, ergibt offenbar, dass die Gesamtergebnisse zur Beeinflussung des inneren Augendruckes gut sind. Die Statistiken sind für die Stallardsche Operation ungefähr die gleichen wie für das von Guyton angewandte Verfahren. Die Erfolge der Autoren, die sich der Scheieschen Methode bedienen, sind ebenfalls ähnlicher Art (Tabelle 1 und 2). Komplikationen treten offenbar wie bei allen chirurgischen Vorgängen auf. Sie sind nicht immer die Folge unzureichender Technik, können aber auf falscher Beurteilung oder auf noch unbekannten und daher noch unvermeidlichen Faktoren beruhen. Manchen Patienten ergeht es nicht gut: Linsenveränderungen entwickeln sich bei manchen schneller als bei anderen, ihr Filtrierbläschen vernarbt sich. Bei anderen kann es zu einer Vorderkammerblutung oder zu einer Uveitis kommen, oder die Bildung der vorderen Kammer kann sich verzögern. Es gibt so zahlreiche Komplikationen, dass man zögern mag zu operieren. Wenn jedoch die Indikationen klar sind und der Patient einen ansteigenden Basisdruck mit Verlust des Gesichtsfeldes, tonographisch nachweisbaren ungünstigen Veränderungen und mit einem deutlichen Absinken der Ausflussmöglichkeiten des Augenwassers zeigt, bleibt dem Ophthalmologen keine Wahl, und er muss sich zur Operation entschliessen. Es stehen eine Reihe von Verfahren zur Beeinflussung des chronischen Glaukoms zur Verfügung. Welches davon man wählt, spielt keine grosse Rolle; Komplikationen kommen bei allen vor. Der Augenarzt sollte die Technik anwenden, mit der er am meisten vertraut ist, zu der er dass grösste Zutrauen hat, und die ihm die besten Ergebnisse gebracht hat. Er sollte die möglichen Komplikationen und die Methoden sie zu behandeln genau kennen.

RIASSUNTO

Dallo studio della letteratura recente sulle operazioni fistolizzanti nel glaucoma appare che in generale i risultati sono buoni per quello che si riferisce al controllo della pressione intraoculare. Si con l'operazione di Stallard che con quella di Guyton in risultati sono approssimativamete gli stessi, e cosí pure con il metodo di Scheie. Come in ogni tipo di chirurgia, anche in questa vi sono complicazioni; queste non sempre sono il risultato di una technica scorretta, ma possono essere dovute ad errori di giudizio o a fattori sconosciuti e quindi impossibili da evitare. Alcuni malati vanno male; in alcuni compaiono modificazioni della lente piú rapidamente che in altri; in altri ancora compare ifema o uveite, o vi é una ritardata formazione della camera anteriore. Le complicazioni sono cosí numerose che si esita a operare, ma se vi é un'indicazione precisa all'intervento e la pressione tende ad aumetare, con perdita evidente del campo visivo e diminuzione sensibile nello scarico di liquido, allora l'oftalmologo non ha scelta e deve ricorrere all'intervento chirurgico. Molti sono i metodi a disposizione per controllare il glaucoma cronico, peró vi é poco da scegliere fra di essi perché le complicazioni si verificano in ognuno di essi. Si deve usare la tecnica alla quale si é abituati e con la quale si sono avuti i risultati migliori. Bisogna essere a conoscenza delle possibili complicazioni e dei metodi per trattarle.

RÉSUMÉ

Il ressort de l'étude de résumés récents d'opérations fistulisantes pour glaucomes (surtout en cas d'iridencleisis), que les résultats globaux sont bons en ce qui concerne le contrôle de la pression intra-oculaire. Les statistiques sont à peu près les mêmes, qu'il s'agisse des techniques de Stallard, de Guyton ou encore de Scheie (voir tables 1 et 2), et il est inévitable que l'on se heurte lá aussi à des complications, comme il arrive dans tous les domaines de la chirurgie. Elles ne résultent pas toujours d'une technique déficiente, mais peuvent provenir d'erreurs d'appréciation ou de facteurs encore inconnus, donc impossibles à contrôler. Les difficultés peuvent aussi provenir des réactions des malades (modifications plus ou moins rapides de la lentille, formation d'un hyphéma ou d'une uvéite, retard de formation de la chambre antérieure). Les risques de complications sont si nombreux que l'on hésite parfois à opérer. Mais l'ophtalmologiste n'a pas le choix et doit procéder à une intervention chirurgicale lorsque l'indication est clairement posée (pression de base en augmentation, diminution nette du champ visuel, évidence tomographique de modifications défavorables, etc.).

Nous disposons de plusieurs techniques pour le glaucome chronique, mais aucune n'est exempte de complications. Le spécialiste devrait s'en tenir à celle qui lui est la plus familière, qui lui inspire le plus de confiance et qui lui a déjà donné de bons résultats. Il est très important qu'il soit au courant de toutes les complications possibles ainsi que des méthodes de traitement qui leur sont applicables.

RESUMEN

Considerando las recientes publicaciones sobre el tratamiento quirúrgico del glaucoma, y en especial sobre la iridencleisis, se desprende que se obtienen buenos resultados capaces de controlar la presión intraocular.

Tanto la técnica de Stallard como la preconizada por Guyton ofrecen estadísticas semejantes; también lo son las de Scheie (ver tables 1 y 2). Como en todo tratamiento quirúrgico, es evidente que pueden presentarse complicaciones, pero no siempre se deben a una insuficiencia de la técnica sino a herrores en el diagnóstico o a factores desconeocidos y por tanto incontrolables.

Algunos enfermos llevan un curso malo: se producen cambios en la estructura del cristalino, más deprisa en u nos que en otros, consistentes en el desecamiento y cicatrización de sus vesículas. En otros enfermos aparecen ifemas y uveitis, y en otros casos la cámara anterior del ojo tarda mucho en formarse. Las complicaciones son tantas que surgen dudas a la hora de la intervención; pero cuando la indicación es terminante (presión intraocular en ascenso, reducción del campo visual, cambios desfavorables demostrados por la tomografía, insuficiencia evidente en el drenaje del humor acuoso), el oftalmólogo no tien otra alternativa que la de operar.

En los casos de glaucoma crónico hay varies procedimientos quirúrgicos, pero en todos ellos surgen complicaciones, por lo que nunguno es definidamente el mejor.

Deberá ser empleado la técnica a la que el cirujano esté más habituado, aquella en que tenga más confianza y con la que haya obtenido mejores resultados. Habrá de tener un conocimiento exacto de las posibles complicaciones y sus tratamientos.

SUMARIO

Diz que o estudo de recentes sumarios sobre operações fistulisante nos glaucomas, particularmente a iridoclise mostra existirem melhores resultados no controle da pressão intraocular. Refere que as estatistas são as mesmas quando se considera os

metodos de Stallard e de Guyton, sendo tambem similares as obtidas com o Scheie (Tuadros 1 e 2).

As complicações nem sempre são o resultado de técnica mediocre mas podem ser devidas a erros de julgamento ou a fatores desconhecidos impossiveis de controlar. Em alguns doentes as modificações do cristalino são mais rapidas emquanto que em outros os linfomas e uveites podem ocorrer. As complicações são tão numerosas levam a indecisão operatoria mas se as indicações são evidentes e o paciente exibe pressão elevada com perda da visão, o oculista não tem escolha senão operar. Existem muitos metodos para controle do glaucoma cronico, existindo complicações em todos eles. Aconselha a que seja usada a tecnica em que o oculista tenha maior experiencia e confiança.

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Woman's participation in medicine has changed with the evolution of the profession. In ancient and medieval times, woman's contribution to medicine was taking care of the sick: today she also helps the physician. With diligence, dignity, and authority she labors in offices, hospitals, laboratories, statistical departments, technical auxiliary services, administrative offices, complex communication systems, and many other areas of vital importance to the physician and medical progress. Perhaps in no other profession has woman established herself with as much dignity and authority as in the medical profession.

—*Marti-Ibañez*

Orthopedic Surgery

The Orthopedic and Prosthetic Appliance Clinic Team

EVERETT J. GORDON, M.D.
WASHINGTON, D.C.

The number of amputees in the present-day population of the United States has risen to such a significant number that their problems are best solved by a group of well-trained specialists operating as a team. The use of such groups has facilitated the proper prescription of prostheses, orthopedic appliances and special shoes, to the increased satisfaction of the patient, the prescribing physicians and the purchaser. Operating surgeons who are untrained in prosthetics should avail themselves of local prosthetic team facilities so that their patients will receive the optimum prosthesis. It has been demonstrated that the amputee's problem can be better interpreted by an assembled team of specialists rather than by individual effort.

THE number of amputees in the United States at present has risen to a significant height as a result of two world wars, the Korean conflict, increased military activities and a vast number of automobile and industrial accidents. The numerous types of land mines and high explosives employed in modern warfare and the high speeds associated with vehicular accidents have caused many fatalities and a high incidence of loss of limbs. Rapid evacuation of battle wound casualties, improved military medicine and modern chemotherapeutics, however, have saved many lives, including those of persons with traumatic or operative amputations who otherwise would not have survived to augment the amputee population. Today there are some twenty thousand service-connected amputee veterans requiring prosthetic aid, but an even greater artificial limb problem is created by the twenty-five to forty thousand new amputations occurring each year as a result of automobile and industrial accidents. The amputee problem and the associated need for artificial limbs have become an important segment of the medical care program.

In early 1949 the Veterans Administration offered an indoctrination course at the New York City Regional Office for the training of personnel to organize special orthopedic and prosthetic appliance clinics, in order to provide the best possible prosthetic service for its amputee veterans. It was recognized that a specially trained team of specialists, each concerned with an individual phase of the prosthetic and rehabilitation problem, could provide infinitely better service than each specialist working alone by the individual consulta-

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Read at a meeting of the Pan-Pacific Surgical Association, Honolulu, Nov. 19, 1957.

Submitted for publication Feb. 26, 1959.

tion method previously employed. On May 13 such a clinic was established in Washington, D.C., under my direction, and since then additional clinics have been organized in all sections of the United States, including Hawaii, thirty-five in all.

Purposes.—The purposes of the orthopedic team operating in a special clinic are as follows: 1. To provide adequate medical supervision of fitting and adjustment of orthopedic appliances. 2. To provide proper training and treatment relative to the furnishing of orthopedic appliances. 3. To act as an extension in field testing and appraisal of orthopedic devices resulting from research of the Veterans Administration and the National Research Council. 4. To effect an economy of expenditures by the United States Government in the issue and maintenance of orthopedic appliances.

In addition, the clinic team functions in cooperation with the hospital services, making recommendations for surgical correction of deformities when feasible, and in other instances aiding in the proper care of amputees, i.e., preventing deforming contractures and undesirable stumps that would make the fitting of prostheses a difficult problem.

Prior to the establishment of the orthopedic and prosthetic appliance clinic team, there was no attitude of cooperation between the limb fitter and the prescribing physician, and the mutual respect now present did not exist. Usually, the physician referred the amputee to a nearby prosthetist with instructions to "give him an artificial limb." Most of the decisions were left to the limb fitter, and he made alterations as he desired. Now the prosthetist receives a full prescription, similar to any medical prescription, with an itemized list of components of the artificial limb, and he is instructed to communicate with the surgeon before he makes any major alterations in such a prescription.

Composition of a Typical Prosthetic Team.—A typical orthopedic and prosthetic appliance clinic team is composed of a group of specialists in the various fields of rehabilitation and prosthetics, designed to analyze the problems of a handicapped person. As evolved by the President's Advisory Committee on Artificial Limbs, it comprises an orthopedic surgeon, physiatrist, physical therapist, administrative assistant, orthotist, one or more prosthetists and an occupational therapist. In addition, special consultants should be available, including a clinical psychologist, psychiatrist, vocational guidance officer and social service worker.

Orthopedic Surgeon. — The orthopedic surgeon is the chief of the clinic team and must be well experienced and trained in the prescription and application of orthopedic appliances, shoes, and prostheses. The Veterans Administration has been careful to select orthopedic consultants who are not members of the regular staff, in order to free them from influence or coercion by administrative management or other political pressures. Although the orthopedist usually operates in a regional office or regional medical facility, he is directly responsible only to the Director of the Prosthetic and Sensory Aid Service in the Central Office of the Veterans Administration, and not to the local administrative official. Because of constant progress and the development of new orthopedic appliances and prosthetic components, a proper prescription can be written only by an orthopedist who is experienced and trained in prosthetics, and who has participated in periodic training courses and experimental programs. He must be familiar not only with the conventional prostheses and appliances but also available new devices, so that he may prescribe those aids for the handicapped which will provide maximum comfort and functional value. The surgeon who is experienced in prosthetics is cognizant of the advantages and limitations of the various prosthetic appliances and will be able to approximate more closely the desires and needs of the amputee than could one without special knowledge. This can best be accomplished by interpretation of the problem by an assembled team rather than by individual effort, each member aiding the orthopedic surgeon to prescribe a device that will secure the best cosmetic and functional value for the wearer.

The orthopedic consultant is responsible for medical supervision of all clinic activity, and he is primarily responsible for the writing of the prosthetic prescription. It is his responsibility to conduct an examination of the individual patient; to provide complete and accurate medical records; to direct, supervise and prescribe the treatment for fitting the orthopedic appliances and training in their use; to cooperate with authorized research programs; and to prescribe corrective surgical treatment when indicated. By close coordination between the orthopedist and local hospital facilities, the patient can be referred back to the prosthetic team after the prescribed operation, for follow-up care and prescription of the modified prosthetic device which will then be indicated.

The surgeon should consult with all members of the prosthetic team, so that the final prescription will represent the best pooled thought of the entire group. In addition, he should prescribe and supervise physical and occupational therapy, training, and exercises and should make the final appraisal of the results.

Physical Therapist.—In the first Pilot Clinics another physician, a physiatrist, was assigned to the team as the orthopedic surgeon's first assistant. In most clinic programs today, however, this member of the team has been eliminated and a portion of his duties assumed by the physical therapist. In some civilian rehabilitation programs the directive role has been assumed by well-trained physiatrists. It is the opinion of the American Academy of Orthopedic Surgeons that rehabilitation of orthopedic problems should properly be directed by an orthopedic surgeon, who is best qualified by his training to understand all facets of these problems. The physical therapist functions as the orthopedist's first assistant in the examination and treatment of the veteran, aiding him in assaying the orthopedic deformities, such as contractures, muscle atrophy, weakness and limited joint motion. Upon direction of the orthopedist he performs manual or electrical testing and reports his observations to the Clinic chief before the final prescription is written. He aids the orthopedist in determining the proper indications for physical therapy and then schedules the therapy as required. In many instances, where an occupational therapist is not available, he assumes these duties as well and directly supervises all of the training of the amputee in the use of his new prosthetic device.

The physical therapist should also advise the surgeon, when the prescription is being formulated, of anticipated training problems and possible solutions. During the training sessions he may call the surgeon's attention to any fitting or harnessing difficulties that have become evident and may require modification of the prosthesis. In such cases the patient is returned to the Clinic, so that modifications may be ordered in conjunction with the prosthetist.

The therapist is also of great aid to the orthopedist in making a final evaluation and check-out of the prosthesis and in completing the forms required by the various research programs in which the Clinic participates. The therapist on a prosthetic team must be one with special training in the field of prosthetics, since the average therapist is unfamiliar with this subject. In addition, the therapist maintains a duplicate record and brief abstracts of the veteran's treatment folder directly in the Clinic; this is especially helpful when the veteran's folder has been detained elsewhere or is otherwise not available.

Prosthetic Representative.—The prosthetic representative or administrative assistant is a Veterans Administration employee who performs all necessary liaison pertaining to administrative matter. It is his duty to have all administrative records available; to ascertain in advance the eligibility of the veteran for the prosthetic device; to provide and supervise the physical layout of the Clinic with regard to all required equipment; to provide stenographic aid; to counsel veterans as to their rights and the benefits of the service program, and to arrange for their Clinic and follow-up appointments. He should relieve the physician of as much paper work and administrative detail as possible. It is also his duty to notify veterans of the availability of new designs and mechanical features that may be of benefit in any particular case. Usually the Administrative Assistant is an amputee himself and this gives him keen insight into the amputee's situation and establishes a bond of sympathy between the veteran and the Clinic. He provides a means of direct association between the prosthetic team, the limb manufacturers and the Veterans Administration supply facilities, and supervises the financial transactions.

Prosthetist.—The prosthetist is a valuable member of the Clinic team, since he fabricates the prosthesis and is present with the amputee at the fitting and examination. He can be of great aid to the orthopedic surgeon because of his experience in using various prosthetic components and devices in other and similar cases and because of his close association with the veteran from previous personal contacts in his shop. He may be able to advise the orthopedist of various peculiarities of the veteran that may alter the prescription and modify the Clinic team's approach by indicating problems not otherwise apparent. The prosthetist also aids in the conduct of research studies and functional evaluations, usually supplying the research prosthetic components.

Generally, the Clinic is attended by a representative of each local manufacturer of artificial limbs. At no time is the veteran directed to go to any particular shop. In our Clinic each prosthetist is encouraged to express freely his recommendations and his criticisms of all prosthetic devices, whether of his own manufacture or not, so that the amputee may benefit from the opinion of the entire team.

Occupational Therapist. — The clinic does not always have the services of an occupational therapist, but when one is available she can be of definite assistance in training the amputee in use of the prosthetic appliance and administering occupational therapy. As a result of such training, the need of special devices to assist in the patient's occupation may become apparent and can be supplied.

In formulating a prosthetic prescription, the amputee himself should be considered a temporary member of the Clinic team, as his opinions and desires are highly important to the ultimate success of any prosthesis prescribed. Many amputees, by association with other amputees and through personal experience, acquire certain prejudices and obsessions that may alter or modify a prescription. Occasionally, because of the veteran's severe psychoneuroses or obsessions, one is not able to prescribe the type of prosthesis indicated, lest it jeopardize the acceptance of the prosthesis. In some cases, when the psychoneurotic trend is only moderate, the Clinic team presentation sufficiently impresses the veteran to cause him to modify his own desires and accept the prosthesis the team believes best for his particular amputation.

In the solution of special problems the prosthetic clinic has access to other consultants, such as a psychiatrist or clinical psychologist when a neurotic situation exists, or a vocational guidance officer to help select terminal devices for an arm prosthesis to aid in job training.

Proper physical facilities greatly facilitate the operation of a prosthetic clinic. A two-room suite is desirable, with a dressing room to prepare for the examination and an adjacent examining room of sufficient size and length, approximately 20 by 40 feet, to provide a long walking area, in order that gait characteristics may be noted. Provision of tightly knitted swimming trunks for lower extremity amputees will permit observation of the entire prosthesis in both stance and gait. Such trunks are easily laundered and provide adequate covering.

Additional Functions of the Clinic Team.—Since its establishment in 1949 the prosthetic team has proved its merits to the satisfaction of the veteran, the limb manufacturing companies and the Veterans Administration. The amputee has learned that by utilizing this special Clinic he is assured the best possible prosthesis and prosthetic service for his amputation. The number of visits required has been drastically reduced. Prostheses must measure up to proper standards of workmanship and material. Routine checkup examinations result in increased length of service and comfort and better maintenance, with necessary alterations and adjustments to make the device more serviceable. New prostheses are prescribed only when definitely indicated and only after condemnation of an unserviceable prosthesis, whereas, previously, artificial limbs were ordered by almost any physician in the outpatient service and frequently were ordered as a matter of expediency, with little or no follow-up care. Often the prosthesis was unsatisfactory, and its only use was to fill up closet space. Now the veteran must report to our Clinic to receive his new prosthetic or orthopedic device and receive a complete check-out at that time, instead of having the new prosthesis mailed to him with no knowledge of its fit or serviceability. By such measures the Clinic team has proved that its cost is far outweighed by the reduced expenditures resulting from its maintenance.

The Clinic team may be asked to decide whether special orthopedic devices are indicated in questionable cases. This includes prescription of wheelchairs for partially paralyzed veterans; prescription of canes and crutches; prescription of orthopedic shoes and braces, etc. In some instances the motivations of the veteran may be suspect; the request for orthopedic shoes or braces, for example, may be an effort to increase his disability rating. The Clinic team is better qualified to make decisions in such cases than is a doctor in the outpatient service, who may be under various political or administrative pressures, or who may follow the line of least resistance to satisfy an aggressive and bothersome veteran. In some instances, such visits have resulted in elimination of previously issued special orthopedic shoes or braces by recommendations for surgical correction of a deformity, with resultant benefit to the veteran.

Prosthetic Problem of the Upper Extremity.—One of the most significant contributions of the prosthetic team has been its aid to upper extremity amputees, who notoriously have been slow to accept prostheses because of the complicated problems involved in their use. This is in contrast to lower extremity amputees who are almost forced to accept a prosthesis for walking and weight bearing. The unilateral upper extremity amputee frequently dispenses with the prosthesis, adjusting himself to the use of one arm and using the stump as a paperweight or, if he possesses an elbow joint, using this joint's function to assist his intact arm. Owing to the remarkable progress in upper extremity prosthetics from the research programs currently conducted by the University of California at Los Angeles, New York University and the National Research Council, a much more acceptable prosthesis has become available to the upper extremity amputee. The prosthetic clinic has advised amputees of available new prostheses and supervised their fitting and the training so necessary to successful function. Today there is no longer any excuse for an empty coatsleeve, as even a cosmetically good arm can be fitted if a functional prosthesis is not acceptable to the veteran. For bilateral upper extremity amputees even greater advances have been made, including the appearance of various types of terminal device and other components to aid in the amputees' rehabilitation.

The Clinic Team in Research.—An important function of the Clinic has been its participation in research programs to evaluate new items. Military patients are unsuitable for such a program because of difficulties in proper follow-up studies due to transfer, discharge from the service, etc., and their strong motivations, such as their desire for discharge, their resentments, etc., which might color their opinions of the value of such devices.

The prosthetic Clinic in Washington has been so fortunate as to have been selected for participation in most of the research programs, in close association with the Army Prosthetic Research Laboratory in Washington. A brief summary will demonstrate the value of the prosthetic clinic in research activities.

The Above-Knee Suction Socket Prosthesis Program: Of the 11 experimental users of this prosthesis in 1949, 9 were completely successful and 1 is still wearing a suction socket prosthesis. Some veterans were initially refused prostheses because of apparent contraindications, but later they became successful suction socket wearers as a result of our increased experience.

Studies to Reduce Perspiration of the Stumps: Our Clinic has experimented with the use of various pharmaceuticals, such as 0.1 of 1 per cent formaldehyde, the use of deodorant preparations incorporated into a cream base for application to the stump, iontophoresis of aluminum salts, and silica gel bags to absorb excess moisture. This remains an unsolved problem, and the optimum product has yet to be found.

Survey of Orthopedic Braces: Twenty veterans using long-leg braces, short-leg braces, arm braces and back braces were selected at random and asked to report to the Clinic for an unspecified reason. Of the 20 it was found that 7 did not require a brace, and 4 of these were not even wearing their braces when they reported to the Clinic. In 1 case operation was recommended and eliminated the need of a brace.

Field Evaluation of the APRL Hook: The benefits and hindrances involved in the use of the APRL hook were evaluated and reported to the central office, note being taken of the benefits of differential pressure and the aid of the free-wheeling feature, but there was early fatigue from increased muscle action to activate both opening and closing of the hook.

Study of Length of Service of Artificial Limbs: In 1951 we made a study of the need of replacement of artificial limbs prior to the standard three-year period of use previously established. All applications for new limbs prior to expiration of the three-year period were referred to our Clinic for evaluation. It was noted that in certain occupations replacement was sometimes required within the three-year period, but that in other cases, by proper maintenance and adjustment, the period could be extended to more than three years.

Survey of Excessive Issue of Orthopedic Shoes: Existing regulations state that a veteran with a foot deformity should have two pairs of serviceable orthopedic shoes in his possession at all times. A study to

Orthopedic and Prosthetic Appliance Clinic, Washington, D.C., 1952-1957

Period Covered	*No. of Clinics*	*Scheduled Appointments*	*Total No. Examined*	*Average No. Scheduled Per Clinic*	*Average No. Failing to Report Per Clinic*	*Average No. Examined Per Clinic*
7/1/52 to 6/30/57	36	236	195	6.63	1.20	5.44
7/1/52 to 6/30/54	52	357	301	6.74	1.06	5.68
7/1/54 to 6/30/55	52	473	361	9.10	2.16	6.94
7/1/55 to 6/30/56	50	449	395	8.99	1.09	7.91
7/1/56 to 6/30/57	52	503	433	9.67	1.35	8.33

determine serviceability was made in 1952, after repeated observations had noted that the shoes brought into the clinic for condemnation were usually very dilapidated and minus serial or date markings, so that they could have been issued several years before. As veterans were in this way obtaining more than the authorized two pairs of shoes, recommendations were made for proper marking and dating of each new issue of orthopedic shoes, so that they could later be identified when presented for condemnation. This has now been adopted as standard procedure and has been of aid in establishing the serviceability to be anticipated from special shoes.

Field Testing of Upper Extremity Prostheses: The Washington Clinic was one of several selected for field testing of upper extremity prostheses in 1953, after our team had completed an intensive course in upper extremity prosthetics at the University of California at Los Angeles. The testing was done in close conjunction with a representative from New York University and resulted in an affirmative evaluation of the laminated plastic type of upper extremity prosthesis and the APRL hook and hand. Special prescription forms and check-out forms were designed as a result of these studies.

Field Check of the Navy Above-Knee Prosthesis with Navy Variable Cadence Knee Joint and Navy Functional Ankle: In conjunction with New York University we engaged in the field testing of this experimental prosthesis. It was found that the special components were unsatisfactory for general use because of poor maintenance and technical reasons.

Field Testing of the Quadrilateral Suction Socket and Sach Foot: This study is currently in progress, utilizing knowledge gained in a course in above-knee prosthetics at New York University in 1956. The Sach foot appears to have definite value in special situations.

Evaluation of "Space Type" Shoes: This study is now in progress. Its purpose is to evaluate the functional and wearing quality of space type shoes (Allan-Murray shoes), for veterans with serious foot deformities who cannot be fitted adequately with the regular orthopedic shoes.

From this brief synopsis it is evident that the Clinic team functions as a valuable arm of our research program by providing necessary field testing of new devices. Future developments will be successful only through such cooperative effort.

Statistical Report. — The activities of the Orthopedic and Prosthetic Appliance Clinic of Washington, D.C., are shown in the accompanying table. Whereas orginally there was considerable skepticism on the part of both veterans and limb manufacturers of the value of such a clinic, it has now been accepted wholeheartedly with sincere enthusiasm, by all concerned. The representatives of the limb companies consider the Clinic one of their best assets

The professional staff of the Medical Division of the Veterans Administration, who originally were reluctant to refer patients to the Clinic and attempted to handle such problems themselves, now rely on us completely and consider our Clinic absolutely essential. The veterans have long learned to look forward to the regular weekly Clinic, and they keep our schedule filled for several weeks in advance. The average attendance has steadily grown, and the number of cancellations and absentees has steadily diminished. The usual Clinic conference lasts two and one half hours, with 8 to 10 patients examined without hurry and with full study and discussion of each individual case.

Three examples of the "problem cases" will serve to illustrate the value of the prosthetic Clinic team.

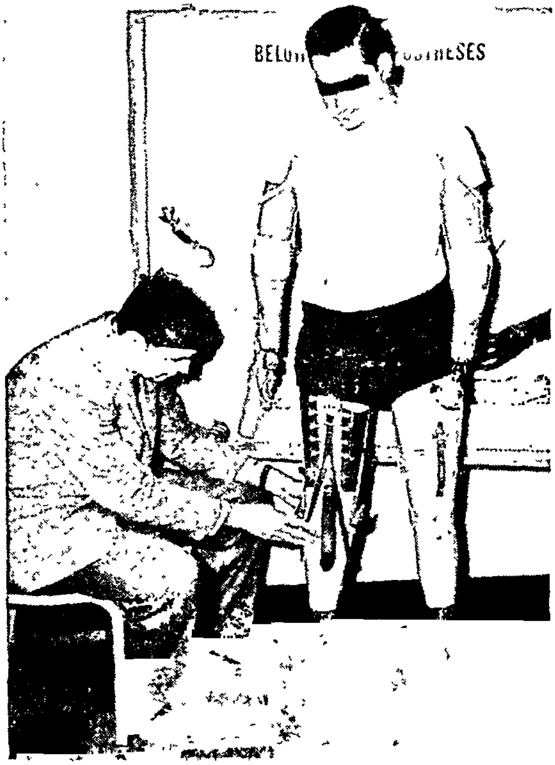

Fig. 1.—Quadrilateral amputee: bilateral amputation below elbow; right leg amputated below knee and left leg above knee.

REPORT OF CASES

CASE 1.—R. L. S., a 27-year-old veteran (Fig. 1), the first quadrilateral amputee of the Korean conflict, with bilateral below-elbow amputations, above-knee amputation on the right and below-knee amputation on the left, was given considerable rehabilitation training at Walter Reed Hospital, followed by vocational guidance and training for work in the Machine Records Division, using IBM equipment. He was referred to our Clinic for selection of proper terminal devices for his arm prostheses to enable him to work with the IBM equipment. The APRL device with which he had been supplied requires two motions, one to open and one to close the hook, and was not suitable in this particular case. After consultation with his vocational guidance officer before our entire Clinic team, he was supplied with one Northrop two-load hook, which has a coiled spring device to effect closure after voluntary opening and a Dorrance No. 5 hook for the other prosthesis. In his case the hooks were covered with Neoprene to prevent slipping of papers.

When last seen, in October 1957, he was working regularly and had found the terminal devices functional for his job. He was walking with the aid of one crutch, for added stability, but was able to walk without a crutch for short distances. This is an example of guided assistance that converted a severely wounded veteran into a self-sufficient citizen with economic independence, despite his unusual handicaps.

CASE 2.—G. L. O., a 39-year-old veteran of World War II (Fig. 2), had a short, badly scarred, irregular above-knee amputation stump, limited hip motion and recurrent osteomyelitis of the pelvis. He was first referred to our Clinic in 1954 after considerable difficulties with breakdown of his knee friction apparatus, recurrence of osteomyelitis from unbalanced pressure in the inguinal region and frequent maintenance problems. Because of the patient's strong desire for an adjustable knee mechanism, this was first incorporated into a prosthesis, but it was removed later, after frequent maintenance difficulties had diminished its value. A modified suction socket pattern was substituted for the old plug socket, plus a pelvic band and single axis hip joint, in order to pull the stump within the socket as far as possible and place maximum weight bearing on the ischial seat. This has proved eminently satisfactory, and when last seen, in October 1957, the patient was wearing the prosthesis regularly and was having no difficulty with his stump. He has also been using PHisohex regularly for cutaneous hygiene with few incidents of skin irritation.

The use of a comfortable and functional artificial limb was especially valued by this veteran, who is a practicing attorney and requires the limb for a presentable appearance in his court and business associations. Incidentally, he informs us that since his prosthetic problem has been solved his practice has shown a considerable increase.

CASE 3.—C. W. S., a 34-year-old veteran (Fig. 3) with a 3-inch (7.5 m.) below-knee stump from shrapnel wounds in World War II, had been wearing a bent-knee type of prosthesis since 1946, and had had considerable difficulty with maintenance problems of the ankle and foot components. In January 1955 the Clinic team prescribed a slip socket type of BK prosthesis, utilizing the patient's own knee joint in gait control, with a partial ischial weight-bearing corset with a filler to compensate for severe flesh defects. After a lengthy trial period, including physical therapy training, the patient was unable to walk satisfactorily with this prosthesis and returned to the use of his bent-knee device. In January 1956 the slip socket feature was removed and a hard socket substituted, with a full ischial weight-bearing corset. The patient cooperated in an intensive course of physical therapy and made steady progress, until finally he was able to wear the new prosthesis regularly and entirely discarded the old bent-knee prosthesis. When last seen, in October 1957, he was so well satisfied that he requested another prosthesis of similar construction, stating that he had no "spare," as he no longer wished to use his old type prosthesis. He has had no unusual maintenance problem, and his stump has remained in excellent condition, aided by the use of PHisohex for regular cutaneous hygiene. This is an example of the team approach in rehabilitation of an amputee by prescribing the most suitable prosthesis for his particular stump.

SUMMARY

The number of amputees in the United States population has now risen to such a significant height that the patient's problems are best solved by a group of well-trained specialists operating as a team. The use of such groups has facilitated the proper prescription of prostheses, orthopedic appliances and special shoes, to the increased satisfaction of the patient, the

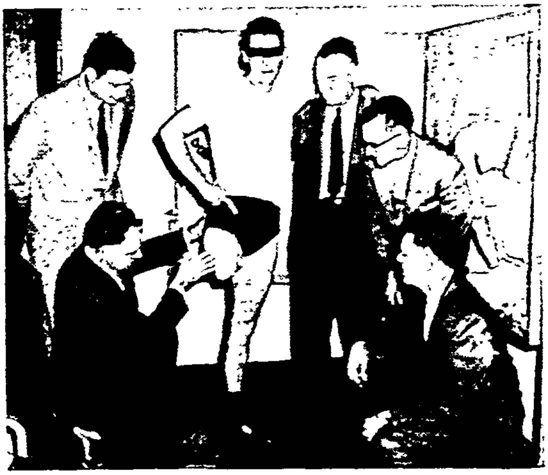

Fig. 2.—Short above-knee amputation stump with severe scarring.

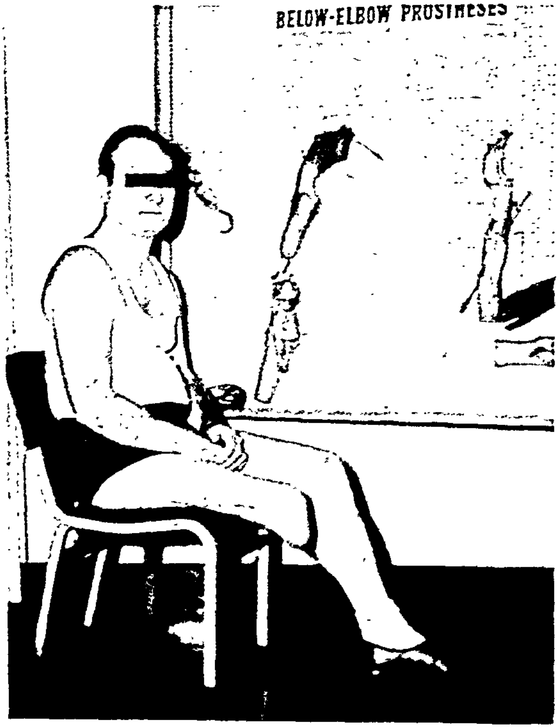

Fig. 3.—Very short below-knee amputation stump with flexion contracture deformity.

prescribing physicians and the purchaser.

The prosthetic team consists of an orthopedic surgeon, a physical therapist, one or more prosthetists, an orthoptist, an administrative assistant and an occupational therapist, plus special consultants available, as required. It has reduced need for expensive alterations and replacements of prostheses, increased comfort and function in the use of prostheses, reduced delay in proper care of amputees, increased the standards of manufacturing and workmanship in prosthetic appliances and aided in the evaluation of new research devices.

Through the prosthetic clinic team approach, rehabilitation of the amputee has made definite progress. An ever-increasing number of prostheses is being prescribed through a result of the team concept, and undoubtedly this number will continue to increase. Since its inauguration by the Veterans Administration, private clinic groups have been formed in various rehabilitation centers throughout the country and have given excellent service to their communities. Operating surgeons who are untrained in prosthetics should avail themselves of local prosthetic team facilities so that their patients will receive the optimum prostheses. It has been demonstrated that the amputee's problem can be better interpreted by an assembled team of specialists rather than by individual effort.

RIASSUNTO

Il numero di amputati nella populazione degli Stati Uniti ha raggiunto, oggi, una cifra tale da imporre che i loro problemi vengano risolti da un gruppo di specialisti che lavorino assieme. L'impiego di tale gruppo facilita la prescrizione della protesi più adatta, così da soddisfare ognuno. Esso consta di un chirurgo ortopedico, di un fisioterapista, di uno o più protesisti, di un ortottico, di un assistente amministrativo, di un terapista oltre ad altri consulenti se necessario. Si riduce in tal modo la spesa per le protesi da riparare o sostituire, si aumenta il beneficio di esse, si riduce ogni ritardo nella cura degli amputati, si migliora la qualità delle protesi e si stimola la costruzione di nuovi strumenti. Attraverso l'impiego di tali gruppi specializzati si è ottenuto un indiscutibile progresso nella riabilitazione degli amputati; vengono prescritte protesi in numero sempre crescente, e tale numero è probabilmente destinato ad aumentare continuamente. Formato il primo gruppo presso la Veterans Administration, se ne sono formati altri in tutto il paese, con grandi benefici per la comunità. I chirurghi che non abbiano esperienza nel campo delle protesi possono ricorrere agli specialisti del gruppo locale onde giovare nel modo migliore ai loro malati. E' ormai dimostrato che il problema degli amputati può essere risolto nel modo migliore da un insieme di specialisti riuniti in gruppo piuttosto che da un solo individuo.

ZUSAMMENFASSUNG

Die Zahl der Amputierten in der heutigen Bevoelkerung der Vereinigten Staaten ist so erheblich angestiegen, dass ihre Probleme am besten von gut ausgebildeten Spezialisten, die als eine Gruppe zusammenarbeiten, geloest werden. Die Arbeit solcher Gruppen ermoeglicht die richtige Verschreibung von Prothesen, orthopaedischen Apparaten und Spezialschuhen und fuehrt zur erhoehten Befriedigung des Kranken, des verschreibenden Arztes und des Kaeufers.

Die Arbeitsgruppe besteht aus einem orthopaedischen Chirurgen, einem Spezialisten der physikalischen Therapie, aus einem oder zwei Prothetikern, einem Spezialisten in mechanischer Uebung des Auges, einem Verwaltungsbeamten und einem Beschaeftigungstherapeutiker und je nach Bedarf aus besonderen Konsiliarien. Die Arbeit solcher Gruppen hat die Notwendigkeit kostspieliger Umaenderun-

gen und Auswechslungen von Prothesen herabgesetzt, die Bequemlichkeit und die Funktionstuechtigkeit bei der Benuetzung von Prothesen erhoeht, die Zeitdauer bis zur ordentlichen Versorgung der Amputierten verkuerzt, die Qualitaet der Prothesenfabrikation verbessert und zur Auswertung neuer Forschungsarbeiten beigetragen.

Die Wiederherstellung der Amputierten hat durch die Verwendung klinischer Prothesenarbeitsgruppen sichtbare Fortschritte gemacht. Eine staendig wachsende Zahl von Prothesen wird auf Grund der Erfahrungen der Arbeitsgruppe verschrieben, und es ist anzunehmen, dass diese Zahl weiter zunehmen wird. Seit die Veteranenverwaltung diese Arbeitsmethode eingefuehrt hat, haben sich in verschiedenen Wiederherstellungszentren im ganzen Lande private klinische Arbeitsgruppen gebildet und ihren Gemeinden ausgezeichnete Dienste geleistet. Operierende Chirurgen, die in der Prothesenarbeit nicht speziell ausgebildet sind, sollten sich dieser lokalen Arbeitsgruppen bedienen, um ihren Patienten die beste Form der Prothese zugaenglich zu machen. Es hat sich herausgestellt, dass das Problem des Amputierten von einer Arbeitsgruppe von Spezialisten besser verstanden und geloest werden kann, als durch die Bemuehungen einer einzelnen Person.

RESUMEN

El número de amputados en la problación actual de los Estados Unidos ha aumentado hasta constituir una cifra importante cuyos problemas se resuelven por un grupo de especialistas bien entrenados actuando en equipo. La consecuencia ha sido la prescripción adecuada de prótesis, aparatos ortopédicos y zapatos especiales lo que representa una satisfacción para el enfermo, el médico y el fabricante.

El equipo protésico consta de un cirujano ortopédico, un terapeuta fisico, uno o más protésicos, un ortopédico, un ayudante administrativo y un terapeuta ocupacional, más los especialistas para consulta que sean requeridos. Esto ha reducido la necesidad de reparaciones caras y de sustituciones de las prótesis, ha aumentado en confort y la función con el uso de los aparatos, ha reducido el tiempo perdido en el cuidado de los amputados, ha mejorado considerablemente los standards de construcción de los dispositivos ortopédicos y ha contribuído al progreso e investigación de nuevos dispositivos.

Estos equipos protésicos clínicos han contribuído a un progreso definitivo en la rehabilitación de los amputados. Como consecuencia del concepto de equipo ha aumentado el número de prótesis prescritas y continuará aumentando. Desde la inauguración del Veterans Administration se han formado nuevos equipos en todo el país que prestan excelentes servicios a sus comunidades. Los cirujanos que no están entrenados en estos problemas tienen a su disposición medios de orientación para que sus enfermos puedan beneficiarse de las mejores prótesis. Ha sido pues demostrado que los problemas de los amputados pueden ser interpretados hoy mejor que antes por un equipo especializado y por los esfuerzos individuales.

RÉSUMÉ

Le nombre des amputés a augmenté dans une très grande proportion parmi la population des Etats-Unis, et c'est un groupe de spécialistes entraînés, travaillant en équipe, qui est le plus à même de résoudre des problèmes ainsi posés. Ce sont de tels groupes qui ont facilité la prescription judicieuse de prothéses et d'appareils orthopédiques, à la satisfaction croissante des patients, des médecins traitants et des fabricants.

Ces équipes comprennent un spécialiste en chirurgie orthopédique, un médecin traitant, un ou plusieurs spécialistes en prothèses, un orthopédiste, un auxiliaire administratif et un spécialiste en médecine professionnelle, à quoi il faut ajouter en cas de nécessité, un certain nombre de médecins consultants à disposition. Cette méthode a diminué le nombre des modifications et réajustements de prothèses toujours coûteux, elle a augmenté le confort et le bon fonctionnement des prothèses, facilité le traitement plus rapide des amputés, accru les standards de fabrication et d'exécution des appareils et contribué à la réalisation de nouveaux appareiels.

Grâce aux équipes cliniques de prothèses la réhabilitation des amputés a fait des *progrès décisifs. Elles permettent la prescription* d'un nombre toujours plus élevé de prothèses. Depuis leur création par la Veterans Administration, des groupes cliniques privés ont été formés dans de nombreux centres de réadaptation à travers tout le pays, qui ont déjà rendu d'excellents services. Les chirurgiens non entraînés dans cette spécialité doivent cannaître les facilités que peuvent leur procurer les équipes locales à leur disposition, d'être à même d'offrir à leurs patients les meilleures prothèses. Il a été prouvé que les problèmes des amputés sont résolus de façon beaucoup plus aisante par une équipe spécialisée que par des efforts individuels.

SUMARIO

O numero de amputados atualmente nos Estados Unidos tem se elevado muito de modo que seus problemas são melhor resolvidos por um grupo de especialistas bem treinados. Esse grupo tem facilitado a *indicação adequada de proteses, aparelhos* ortepedicos e sapatos especiais.

O team de protese consiste de um ortopedista, o fisioterapeuta, um ou mais proteticos, um assistente administrativo, um terapeuta de medicina ocupacional, alem de consultantes especiais, tantos quanto necessarios.

Esse sistema de trabalho reduziu despesas, substituições de proteses, aumentou o conforto dos pacientes e seu ganho funcional e auxiliou a availiação de pesquisas *novas sobre a protese.*

Os progressos da rehabilitação dos amputados melhorou grandemente e o numero de prescrições aumentou e continua aumentando sempre. Esse serviço que foi organisado no hospital de veteranos está se difundindo pelo país com resultados muito satisfatorios. Ficou demonstrado que o problema do amputado se torna de melhor solução quando examinado e resolvido por uma equipe de especialistas do que por um esforço individual.

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The thermometer habit is a definite sequel of typhoid, especially in children. Throw away the thermometer, discharge the nurse, soothe the parents.

—*Osler*

Plastic and Reconstructive Surgery

The Correction of Congenital and Acquired Ptosis of the Upper Eyelids

EDWARD A. KITLOWSKI, M.D.
BALTIMORE, MARYLAND

The embryonic and anatomic aspects of the eyelids are discussed to determine, if possible, the cause of congenital ptosis.

The author recommends a procedure introduced, to the best of his knowledge, by the late Dr. John Staige Davis, which he himself has employed since the '20s. Since various methods involving shortening the skin of the eyelids and/or utilizing the ocular muscles have proved unsatisfactory, he has concluded that the best and most lasting results are obtained by using fascia taken from the patient and employing the frontalis muscle to operate the ocular levator. This technic also offers the patient a good cosmetic result and improves the vision.

The acquired type of ptosis should not be operated on until it is reasonably certain that there will be no improvement without it. The congenital type should not be surgically treated until the patient is more than one year old and able to control his voluntary movements.

THE inability to elevate the upper eyelids by the normal function of the levator muscles of the eyes causes ptosis.

The loss of function may be so great that the pupils are completely covered, preventing light from entering. This may result in some loss of vision in one or both eyes. In an effort to permit greater opening of the eye slits, the lower lid tends to fall away, giving the impression of exophthalmos. In an effort to see, the patient lifts his head backward and opens his mouth, which gives him a rather ridiculous appearance. There may be postural deformities in the spine because of the elevation of the head.

Ptosis may be congenital or the result of some illness. The congenital type is the most common and is usually bilateral. The acquired type can result in conjunction with exanthematous disease or turbulent pregnancy, or it can be idiopathic.

The eyes may be normal and overnight the patient may lose the power to elevate the eyelids. Every examination of the spinal fluid, blood and so forth fails to reveal anything. There may not even be an elevation of temperature, and the patient has no symptoms of illness. Ptosis of this type will gradually clear up in about a week or ten days, leaving no ill effects. One may also encounter this type of ptosis

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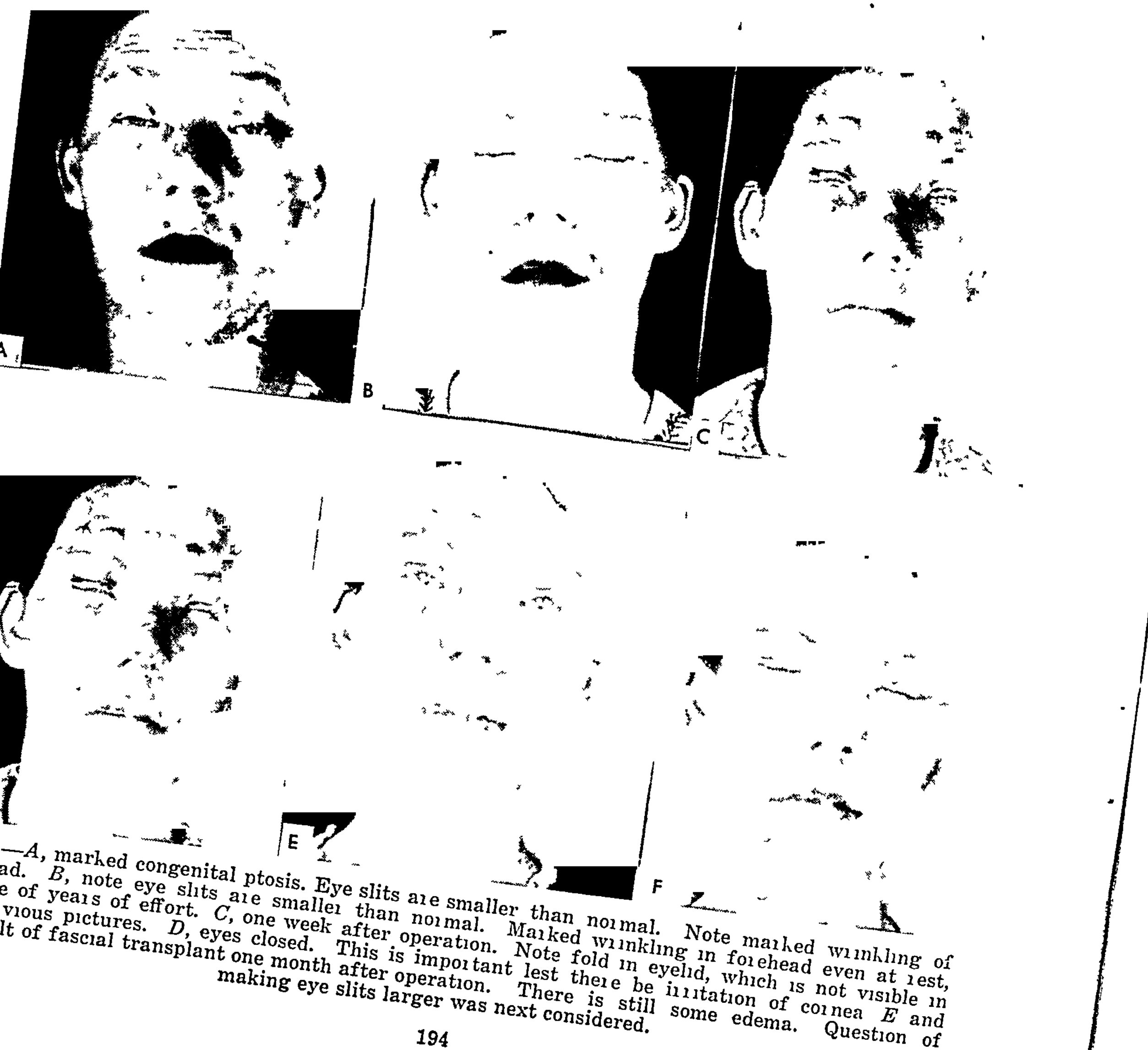
Read at the Twenty-Fourth Annual Congress of the North American Federation, International College of Surgeons, Chicago, Sept. 13-17, 1959.
Submitted for publication Aug. 27, 1959.

with some elevation in temperature and symptoms indicating poliomyelitis. In most cases of this type it will clear up, but in some a residual ptosis is left. This type is observed for some months, and exercises are prescribed. If after a year there is no marked improvement, surgical intervention can be considered.

A review of the embryonic aspects of the area may offer some information concerning the congenital type of ptosis.

Why there should be selective damage to the nerves enervating the levators is a matter of conjecture. During the seventh week of gestation the eyelids begin to develop as folds of skin growing back over the cornea. Having started to form, they close over the eyes rapidly, usually meeting and fusing by the end of the ninth week. This fusion involves only the epithelial layers of the lids and the eyelashes. The glands along the margins of the lids



—*A*, marked congenital ptosis. Eye slits are smaller than normal. Note marked wrinkling of ad. *B*, note eye slits are smaller than normal. Marked wrinkling in forehead even at rest, e of years of effort. *C*, one week after operation. Note fold in eyelid, which is not visible in vious pictures. *D*, eyes closed. This is important lest there be irritation of cornea *E* and lt of fascial transplant one month after operation. There is still some edema. Question of making eye slits larger was next considered.

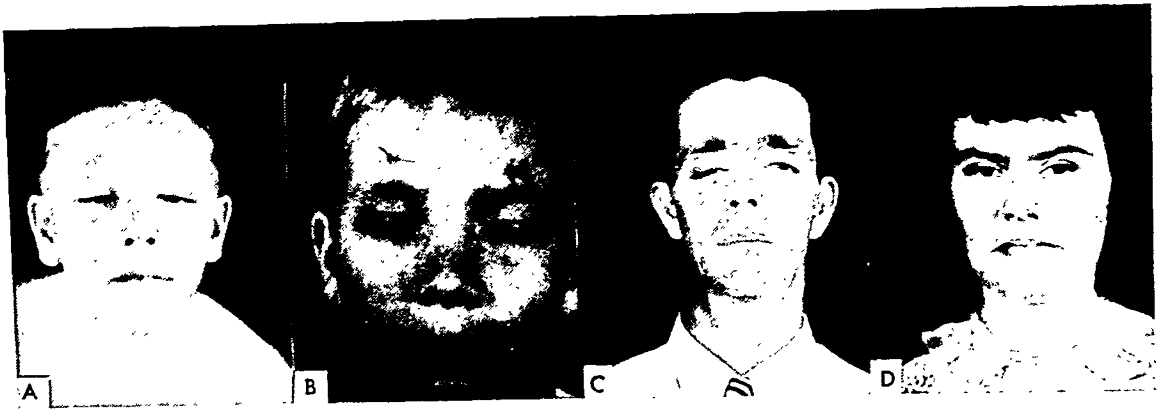


Fig. 2.—*A*, congenital ptosis of eyelids. Eyes can barely be opened. *B*, one week after operation. Note folds in eyelids. It is important to pass fascia at this level to secure a normal appearance of eyelids. *C* and *D*, father of patient has marked ptosis, while mother is normal. When there is a congenital tendency, deformity is transmitted to the male, rarely to the female.

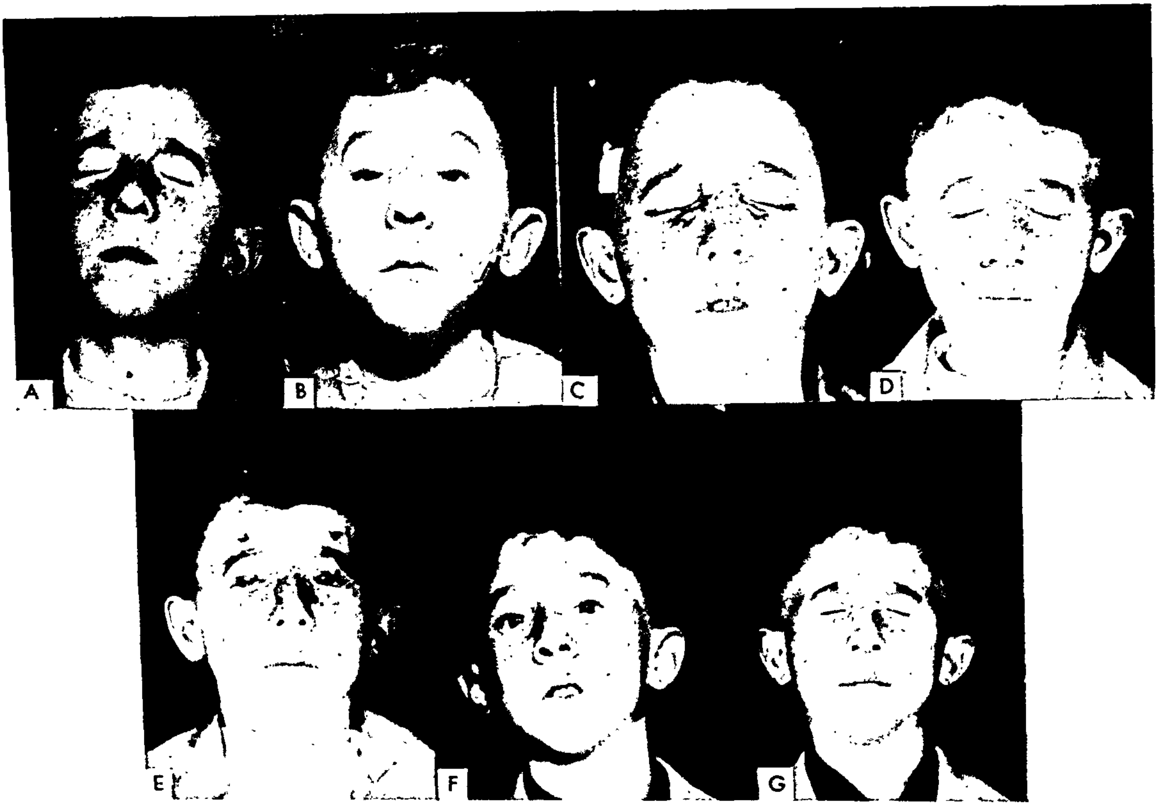


Fig. 3.—*A*, ptosis, congenital, with eyes closed. There was an effort to close eyes, because there was shortness in both upper and lower eyelid. *B*, note elevated eyebrows and tilted forehead. There is very marked epicanthus, making the eye slits smaller and further interfering with vision. *C*, Z plastics were done to reduce the epicanthus before correction of the ptosis. *D*, result of operation on epicanthi. Obstruction to vision is removed. *E*, one year after correction of epicanthus. Fascia was used to correct ptosis. Shortening of eyelids made elevation limited. *F*, one year after fascia transplant. Eyes open fairly well. Eyebrows are still elevated, owing to shortening in eyelids. *G*, lids are closed with effort. Result is fairly satisfactory. Later, skin grafts were used for all eyelids to produce normal appearance. Eye muscles functioned normally.

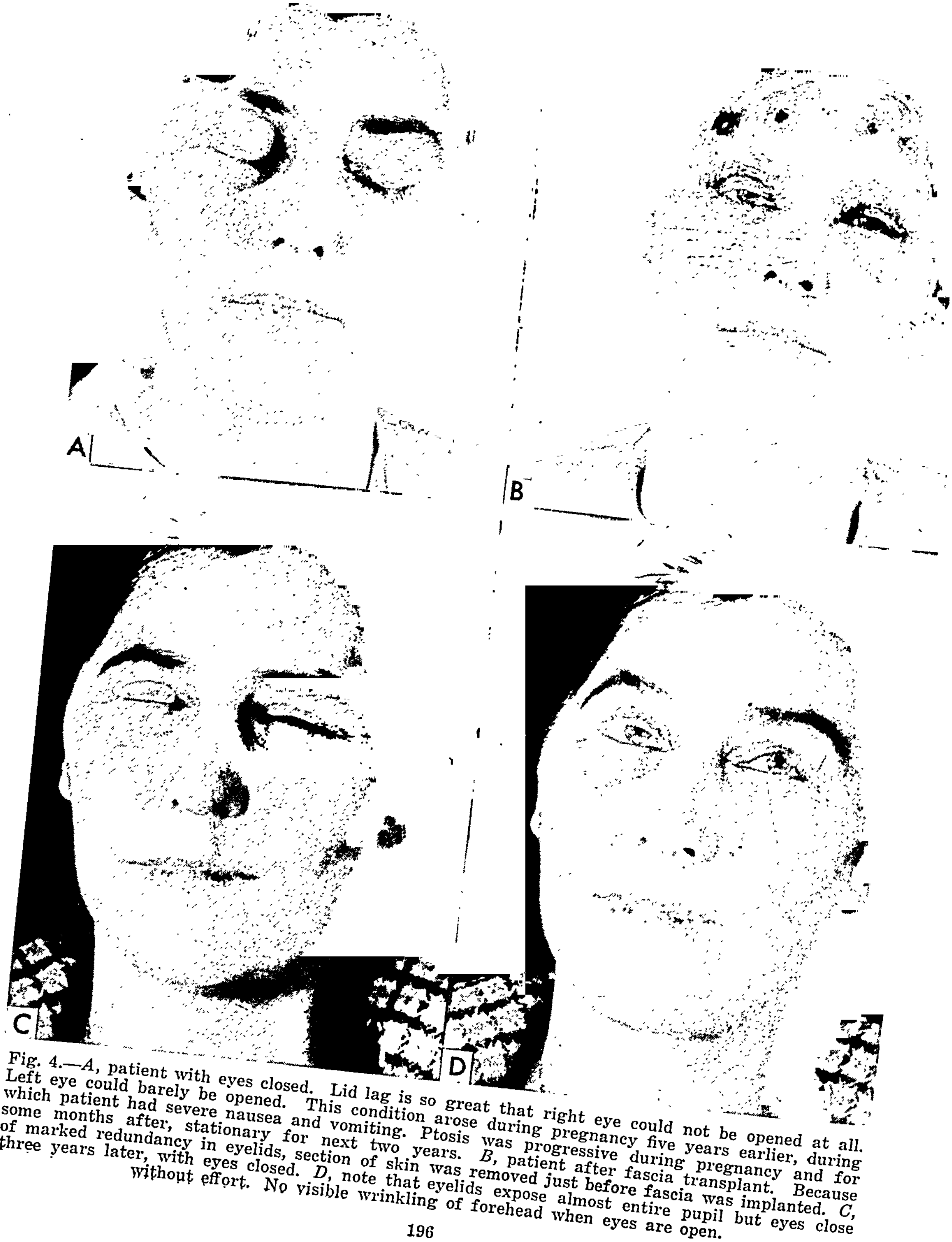


Fig. 4.—*A*, patient with eyes closed. Lid lag is so great that right eye could not be opened at all. Left eye could barely be opened. This condition arose during pregnancy five years earlier, during which patient had severe nausea and vomiting. Ptosis was progressive during pregnancy and for some months after, stationary for next two years. *B*, patient after fascia transplant. Because of marked redundancy in eyelids, section of skin was removed just before fascia was implanted. *C*, three years later, with eyes closed. *D*, note that eyelids expose almost entire pupil but eyes close without effort. No visible wrinkling of forehead when eyes are open.

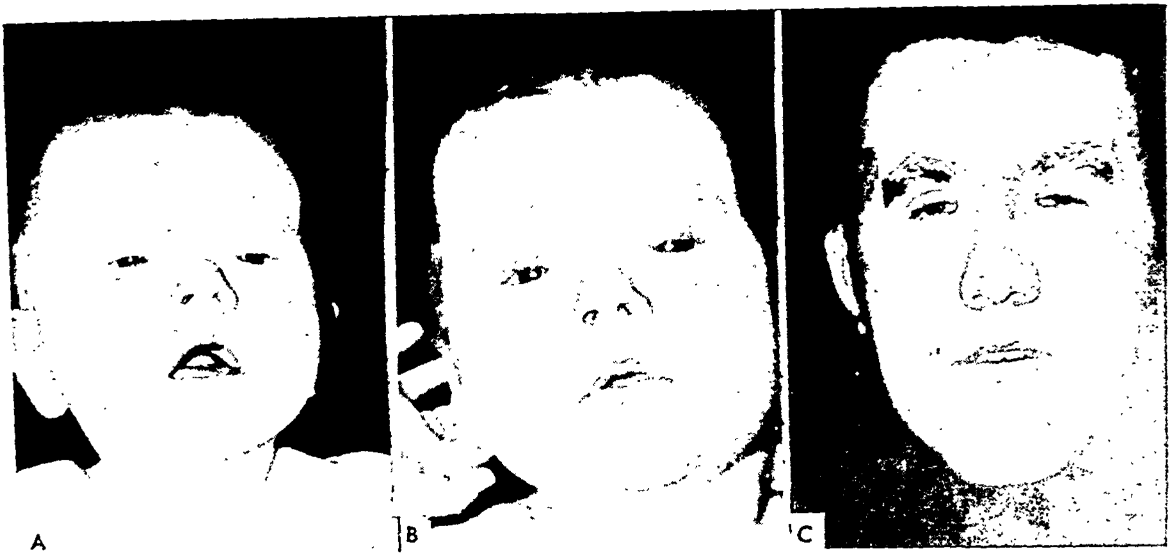


Fig. 5.—*A*, congenital ptosis, very marked, with some epicanthus. *B*, postoperative view, after fascial transplant. Epicanthus makes result look unsatisfactory; eyelids, however, open well. *C*, father of patient. Effort had been made elsewhere to correct ptosis by simply excising skin from eyelids. Note elevation of eyebrows in effort to obtain function.

begin to differentiate themselves from this epithelial lamina before the lids open. The lids begin to open in the sixth month, but usually it is well into the seventh month before this actually happens. The mesodermic tissue has developed beneath the ectoderm from which the muscles of the lids and eyes develop. The oculomotor nerve, which enervates the levator of the eyelid, arises from a group of neuroblasts in the medial part of the basal lamina of the midbrain. The peripheral fibers extend forward to end around the optic cup in the mesodermic tissue from which the eye muscles are derived. The nerve divides into two branches just before it enters the orbit. The inferior branch supplies the inferior oblique, the constrictor of the pupil and the ciliary muscle. The superior branch supplies the superior rectus, the inferior and medial rectus and the levator muscles of the upper lid.

The variety of congenital diseases of the oculomotor nerve suggests that there must be some influence that can act in degrees varying from the simple loss of function of the eyelids[1] to disturbances of motion of the eyes and pupils. The eyeballs rotate outwardly and cannot be moved inward, upward or downward. The pupils are dilated and do not react to light. directly or consensually, during accommodation. Light thrown into the affected

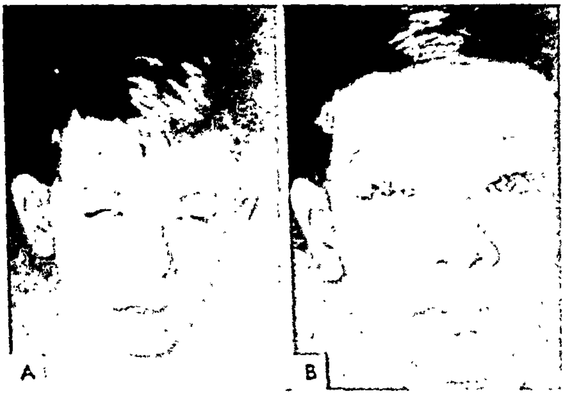


Fig. 6.—Preoperative view of patient. Effort had been made elsewhere to correct ptosis by excision of skin from eyelids. Excision was very radical, and patient could not close eyes. *B*, full thickness graft was inserted from neck, into eyelid. Postoperative result shown three weeks after operation. Adhesions are still present in eyelids. They are to remain for six months after operation to insure smooth healing without shrinkage. Subsequently, other eyelid will be corrected.

eye causes contraction of the opposite pupil. This would indicate that, whatever the cause, it can involve various portions of the nerves. One theory is that there is a mass contraction of all the muscles supplied by the third nerve, due to misdirection of regenerating nerve fibers.

Recent embryologic experimentation[2] seems to indicate the existence of a substance or substances called inductors. These act on the future neural plate from the layers of cells of the archenteric roof, which lies just under it. This influence can activate ectoderm to develop into the brain or any portion of the nervous system. This can explain why it may happen that varying amounts of the ectoderm may be activated by this influence to form portions of the third nerve.

Heredity may be a factor. In 3 cases in my series the condition has occurred in two generations. Two of the patients are male and 1 is female. In the latter case, father and daughter have marked ptosis. Much has been written about genetic, glandular and hereditary causes, but all this is very difficult to evaluate, as is true of most congenital anomalies. Muscular anomalies are not observed in cases of simple ptosis of the eyelids, even when there is some involvement of the ocular muscles. I have not encountered a case of absence or lack of levator muscle. It is really a neurologic failure.

The correction of the deformity resolves itself, therefore, into using muscles to replace the levators functionally and voluntary action of the patient to permit the eyelids to elevate when desired. Numerous operative procedures have been tried, which indicates that not all of the methods produced entirely satisfactory results. Smith[3] reported 57 different methods used for correction. The muscles that have been considered in correcting ptosis are the levator palpebrae superioris, the occipitofrontalis and the superior rectus. The levator splits off the superior rectus, so that the common innervation makes the use of the rectus questionable, since this muscle can be weak. Disturbing the muscles of the eye seems undesirable. Frequently there is a dimpling of the skin or a curtain effect, cosmetically most undesirable. Operations devised to shorten the lid by the removal of skin are entirely unsatisfactory. Those procedures which shorten the lid by partial excision of the tarsal plate or shifting of the levator muscle are also unsatisfactory.

The occipitofrontalis, in its normal function, is an accessory muscle of lid elevation. Utilization of the action of this muscle is the most desirable procedure for the correction of ptosis that is not complicated with disorders of the muscles of the eyeball. The procedure utilized is very satisfactory and offers permanent results.

Two spots are marked on the forehead, about midway between the eyebrows and the hair margin. The location of the spots is about the outer and inner ends of the eyebrow (Fig. 7*A*). Two spots are marked on the eyelid at the juncture of the middle third of the eyelid with the outer and inner thirds. These points are located in the fold in the eyelid just above the lid margin (Fig. 7*B*). These four points are punctured through the skin to permit the entrance of a needle threaded with a strip of fascia taken from the fascia lata of the patient. Fresh autogenous fascia is most desirable. Preserved fascia will stretch, and foreign bodies like silk may cause foreign body reaction. Two tension sutures are placed below the puncture wounds in the eyelid to aid in controlling the passage of the fascia. The fascia, threaded on a cutting needle, is passed through the cut in the forehead, going deep under the eyebrow and under the skin of the eyelid to emerge through the cut made in the eyelid (Fig. 7*C*).

The needle is then passed beneath the skin near the margin of the eyelid, to emerge at the other incision (Fig. 8*A*). As the fascia is pulled through, a suture is passed under the fascia and through the skin to anchor the fascia at this point. This stitch closes the puncture incision in the skin.

The needle is then put through the same puncture wound to emerge in the forehead again, passing deeply beneath the eyebrow (Fig. 8*B*). When the fascia is pulled up, the incision is closed in the lid. The suture includes the fascia so that it will not pull up. The length of fascia in the lid is not under tension between the two openings. The needle is next passed through deep in the forehead to include the frontalis muscle, to emerge at the first opening (Fig. 8*C*). The fascia has been pulled up to elevate the lid and is held by a suture (Fig. 8*D*). The ends of the fascia are tied after the first portion has been pulled up, elevating the lid to the desired level. The knot in the fascia is sutured with silk so that it will not slip. The ends are then passed beneath the skin and cut off where they emerge. These long ends help to maintain the tension of the fascia. The lids cannot be elevated too much, lest they should not close and cover the eyeball. They are elevated in such a manner that the margins are at the upper margins of the pupils. No dressings are applied. Ointment is put over the eyes to protect them. The eyes can be washed daily and more

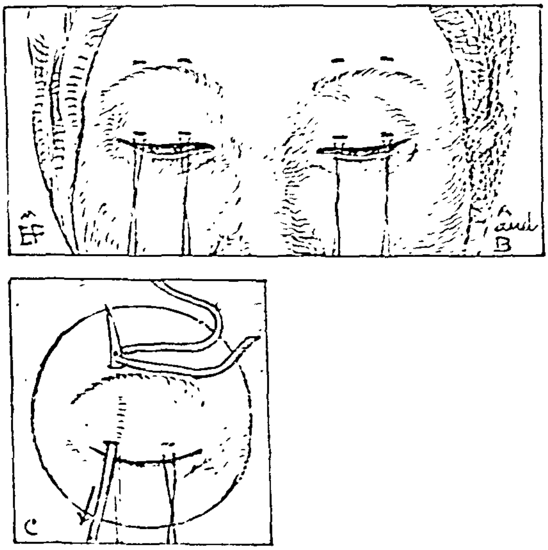


Fig. 7.—*A*, marks are made with brilliant green over the middle of the forehead and on the lids, over the wrinkle just above the margin of the eyelid. Each dot will be punctured with a knife, giving smallest possible openings for introduction of needle. Spots on eyelid are at juncture of middle third with inner and outer thirds. Marks on forehead are so placed as to form rectangle with marks on the eyelids. *B*, two traction sutures are placed just below marks on eyelid to aid in keeping lids taut when fascia is threaded through and to equalize tension when fascia is tied. *C*, needle threaded with strip of fascia is passed through puncture wound in forehead and passed deeply beneath eyebrow, passing out of puncture wound in eyelid. Passage of needle in lid must avoid entering mucosa of eyelid.

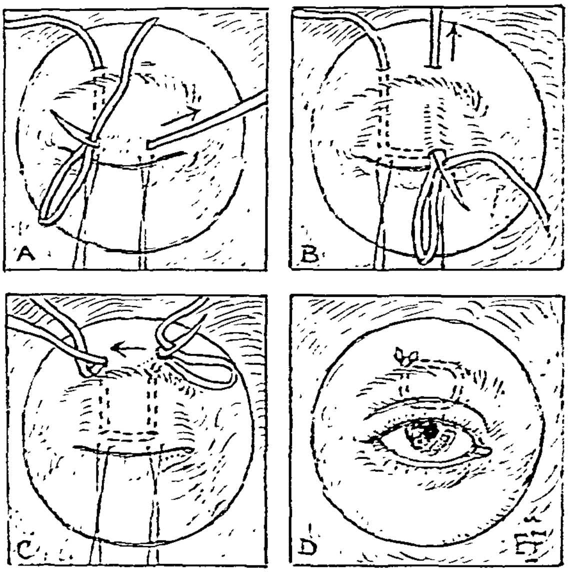


Fig. 8.—*A*, needle is passed beneath skin of eyelid to second puncture wound as fascia is pulled through. Lid is held so that suture can be passed between skin and mucous membrane. These points are in first normal fold of eyelid. *B*, needle is then passed into puncture wound and carried deeply under eyebrow, to emerge in puncture wound on forehead. *C*, second incision in eyelid is closed with suture beneath fascia, which is pulled up so that there is no puckering in eyelid. Needle in now inserted, to emerge at first opening. *D*, before fascia has been completely passed through to first incision it is pulled up to elevate lid and suture is passed beneath and through skin to hold tension. After needle emerges, first end is pulled up, elevating outer portion of eyelid. Ends of fascia are tied, and knot is held fixed with suture. Ends are passed beneath skin toward hairline and cut off as they emerge from skin. Last opening is now closed with suture.

ointment applied. The eyelids will not close over the eyes for a few weeks after the operation, so the eyes must be irrigated and cared for to prevent corneal ulcers. Tone develops in the lower lids, and the ultimate result becomes satisfactory.

The removal of fascia from the thigh does not interfere with the function of the leg after a few days. Sometimes an epicanthus or small eye slits may complicate the situation. Correction of the ptosis should be performed first and the other conditions treated as circumstances indicate. The correction of congenital ptosis should be delayed until the patient is at least 1 year old. This time lapse permits appraisal of the function of the eye muscles. Correction of ptosis subsequent to pregnancy or infection should be delayed for at least a year, to determine whether there will be recovery of function. Paralysis of the frontalis muscle precludes voluntary movement of the eyelid. The operation can be performed to improve the cosmetic appearance and to give the patient reasonable vision.

CONCLUSION

The embryologic and anatomic aspects of the eyelids are discussed in order to determine, if possible, the cause of the congenital type of ptosis. Various operative procedures involving shortening of the skin of the eyelids and/or utilization of the eye muscles are not satisfactory. The most satisfactory operative procedure, with the most lasting results, is the use of fascia taken from the patient and utilization of the frontalis muscle to operate the levator muscle of the eye. Rectangular treatment of the fascia transplant results in even elevation of the eyelid.

The operation offers the patient the best cosmetic result and improves vision. Surgical intervention should not be contemplated until it is reasonably sure that there will be no improvement in the acquired type of ptosis.

The congenital type should not be treated surgically until the patient is more than 1 year old and can control his voluntary movements.

The types of ptosis and the results that can be expected are illustrated by photographs. The author has performed this operation since the twenties. To the best of his knowledge, it was introduced by the late Dr. John Staige Davis.

CONCLUSIONI

Vengono discussi gli aspetti anatomici ed embriologici delle palpebre allo scopo di determinare, se possibile, la causa della ptosi congenita. I vari metodi chirurgici proposti fino ad ora (resezione della cute, utilizzazione dei muscoli oculari etc.) non sono soddisfacenti. Il sistema che ha dato i migliori risultati é quello che utilizza il muscolo frontale per sollevare il muscolo elevatore della palpebra: con un trapianto rettangolare di fascia si ottiene una elevazione simmetrica delle palpebre.

Con questo metodo si ottengono ottimi risultati estetici e si migliora la visione. L'intervento, naturalmente, non deve essere indicato fino a che non si sia sicuri che la ptosi non migliorerá in altro modo.

Vengono illustrati mediante fotografie i vari tipi di ptosi e i risultati che si ottengono. L'autore usa il metodo da lungo tempo; egli ritiene che sia stato introdotto dal Dr. John Staige Davis.

CONCLUSIONES

Se estudian en este trabajo los espectos embriológico y anatómico de los párpados para intentar determinar las causas de la ptosis congénita.

Los diversos procedimientos operatorios con acortamientos de piel de los párpados y, o, utilizando los músculos oculares no son satisfactorios. El método operatorio de mejor resultado y de resultados más duraderos consiste en el uso de una cinta

de fascia lata y uniendo con ella el músculo elevador al músculo frontal.

Esta operación ofrece al enfermo los mejores resultados cosméticos y además mejora la visión. La intervención quirúrgica no debe ser emprendida hasta no estar razonablemente seguros de que no hay posibilidad de curación expontánea.

Los tipos de ptosis y los resultados que pueden esperarse se exponen en diversas fotografías. El autor hace estas operaciones desde hace más de 30 años. Para mejor conocimiento de esta operación, fué difundida por el difunto Dr. John Staige Davis.

SCHLUSSFOLGERUNG

Die embryologischen und anatomischen Eigenheiten der Augenlider werden mit der Absicht, wenn möglich die Ursache der angeborenen Form der Ptose zu bestimmen, erörtert. Verschiedene chirurgische Verfahren mit Kürzung der Haut der Augenlider, mit Benützung der Augenmuskeln oder mit einer Kombination beider Eingriffe, sind nicht zufriedenstellend. Der befriedigendste operative Eingriff, der die meisten Dauererfolge bringt, besteht in der Verwendung der vom Kranken gewonnenen Faszie und in der Benützung des M.frontalis zur Operation des Hebemuskels des Auges. Rechtwinklige Anlegung des Faszientransplantats führt zu gleichmässiger Hebung des Augenlides.

Die Operation schafft beste kosmetische Resultate und verbessert die Sehfähigkeit des Kranken. Bei der erworbenen Form der Ptose sollte ein chirurgischer Eingriff nicht in Betracht gezogen werden, solange man nicht ziemlich sicher ist, dass keine Besserung mehr eintreten wird.

Die verschiedenen Formen der Ptose und die zu erwartenden Erfolge werden durch Photographien illustriert. Der Verfasser hat die Operation seit den zwanziger Jahren ausgeführt. Soweit ihm bekannt ist, wurde sie durch den verstorbenen Dr. John Staige Davis eingeführt.

CONCLUSIONS

L'auteur étudie les aspects embryologiques et anatomiques des paupières afin d'essayer de déterminer la cause de la ptose congénitale. Diverses techniques opératoires comprenant le recourcissement palpébral, l'utilisation des muscles oculaires, ne peuvent pas être considérées comme satisfaisantes, et c'est avec le fascia prélevé sur le patient, et le muscle frontal pour actionner le muscle releveur que l'on obtient les résultats les meilleurs et les plus durables. Le résultat cosmétique est également excellent, et la vision est améliorée. Mais l'intervention chirurgicale ne devrait être envisagée qu'après un délai raisonnable ayant permis de constater qu'une ptose acquise ne s'améliorera plus.

Les divers types de ptose et les résultats auxquels l'on peut s'attendre sont illustrés par des photographies. L'auteur rappelle l'opération dont le créateur paraît avoir été John Staige Davis, et qu'il pratique depuis plus de trente ans.

CONCLUSAO

Procura determinar a causa das ptoses congenitas pelos estudos embriologico e anatomico das palpebras. Diz que os metodos cirurgicos com redução de pele das palpebras utilisando ou não os musculos não são satisfatorios. Considera o uso da fascia lata inserida no musculo frontal elevado o elevador como o metodo mais satisfatorio. Diz que essa operação oferece ao doente os melhores resultados cosmeticos e melhora a visão. Não devem ser tentadas intervenções nos casos de ptose adquirida antes que hja segurança de ausência de regressão natural. Illustra os tipos e resultados obtidos por documentação fotografica. Refere que pratica essa operação há vinte anos e lembra o nome de seu creador Dr. John Staige Davis.

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It was a boon for the medicine man to discover the medical virtues of plants and flowers, and he gradually sought a specific remedy for each illness. To extract poisons left in the flesh by the bite of a snake or a poisoned arrow, he used a hollow tube to suck out the dangerous fluid. His medicine was a mixture of magic, ritualistic mysticism, and a practical sense of curative measures. He stressed the overcoming of disease rather than the tending of the sick person.

It is possible that curare was also used as a therapeutic agent among these primitive Indians. With their empiric knowledge, the Indians of Patagonia and the Orinoco, and the Ticunas, who lived on the shores of the Marañón River, may have conceived the idea of utilizing curare in their medical concoctions. According to La Condamine, the Ticunas sprinkled salt and sugar on their wounds or took them orally as antidotes against curare. The *urari* of the Makushi, studied by Schomburgk in his travels, may have been used as a curative in cases of tetanus type convulsions. In the empiric mind of the medicine man, the gourds containing the dark sirup may have figured as a source of life as well as of death.

It is highly unlikely that once the aboriginal Indians discovered the deadly powers of curare they probed no further. We know that in the Upper Orinoco and in the vicinity of the Rio Negro the Indians swallowed curare, claiming to be immune to its toxic effects. This legend, now disproved, seems to point to the desire of the medicine man to try the curative powers of curare, since he was already acquainted with its lethal effects. Such experiments must have caused many deaths, but perhaps during these tests the primitive medicine man, bent over his vegetable alembic, watching the dripping of the deadly juice, may have perceived some of those very properties that the modern scientist has discovered in his laboratory.

Marti-Ibañez

Immediate Skin Grafting of the Saucerized Tibia in Chronic Osteomyelitis

SIDNEY K. WYNN, M.D., F.A.C.S., F.I.C.S., D.A.B.*
MILWAUKEE, WISCONSIN

CHRONIC osteomyelitis of the tibia with anterior long-standing leg ulcerations plagues the already strained bed capacity of many hospitals throughout the United States. Long-standing orthopedic teachings, which have now apparently become quite standardized, dictate excision of the ulceration, thorough saucerization of the bone, then petrolatum gauze packing of the wound and a policy of waiting until granulations fill in the area. Often the granulations never do completely fill in the wound, as with the long-standing open wound there are some areas of bone exposure that remain, with recurrent chronic ulceration.

Some orthopedic departments will wait until spontaneous healing with scar epithelization takes place; others will attempt to get clean granulation tissue covering and then apply a skin graft for coverage. This, in some instances, will be followed by flap or tube waltz procedures for more satisfactory coverage.

The method here proposed of split skin grafting of the saucerized tibia immediately, at the time of operation, has in my hands been highly successful in most cases—even more so since the advent of the electric dermatome, which takes a uniform thin graft that is easily handled.

A method is presented which, it is hoped, will be used with meticulous attention to detail in order that it may not fall into disrepute.

Immediate skin grafts to the saucerized tibia for long-standing chronic osteomyelitis may help a patient who has been suffering for years because of chronic leg ulcerations.

The method, it is hoped, will supplant the now firmly entrenched method of saucerization, petrolatum gauze packing and endless waiting for granulation, with a later attempt at coverage.

It used to be said in some areas that a free skin graft cannot "take" directly on bone. This may be true of sclerosed cortical bone; it has been my experience, however, that the freshly and adequately saucerized tibia will take a skin graft. This means proper placement, so that the maximal amount of skin comes into contact with the cancellous bone and the healthy, well-beveled edge of the cortical areas.

Immediate skin graft replacement can often save a patient many months of hospitalization and may even mean the difference between the complete cure of a long-standing draining ulcer and a life practically devoted to dressing pads.

The method may easily fall into disrepute if all steps are not carried out to completion from every standpoint. Ade-

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*Assistant Clinical Professor Plastic & Reconstructive Surgery, Marquette University Medical School; Chief of the Section of Plastic & Reconstructive Surgery, Milwaukee County Hospital; Chief of the Department of Surgery and the Section of Plastic Surgery, Mt. Sinai Hospital, Milwaukee, Attending Plastic Surgeon, Milwaukee Children's Hospital.

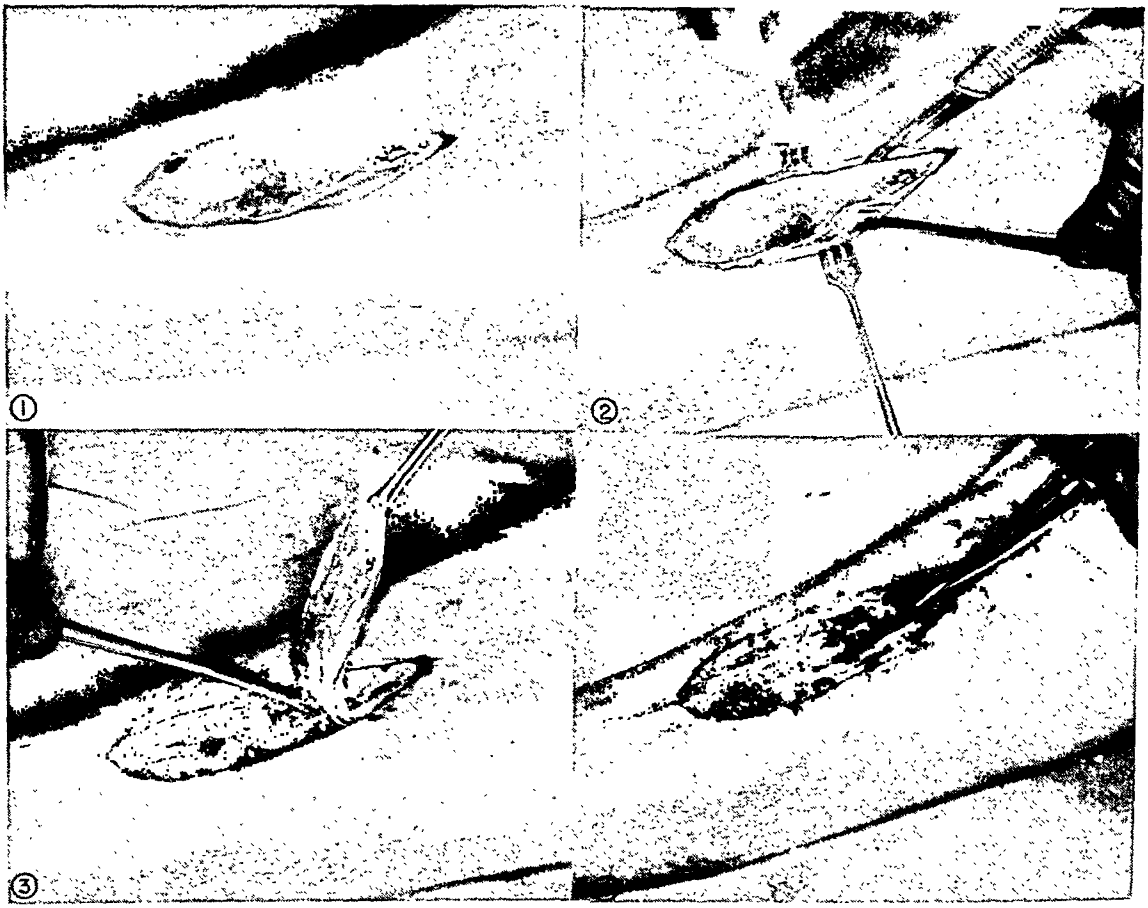
Read at the Twenty-Fourth Annual Congress of the North American Federation, International College of Surgeons, Chicago, Sept. 13-17, 1959.

Submitted for publication Sept. 26, 1959.

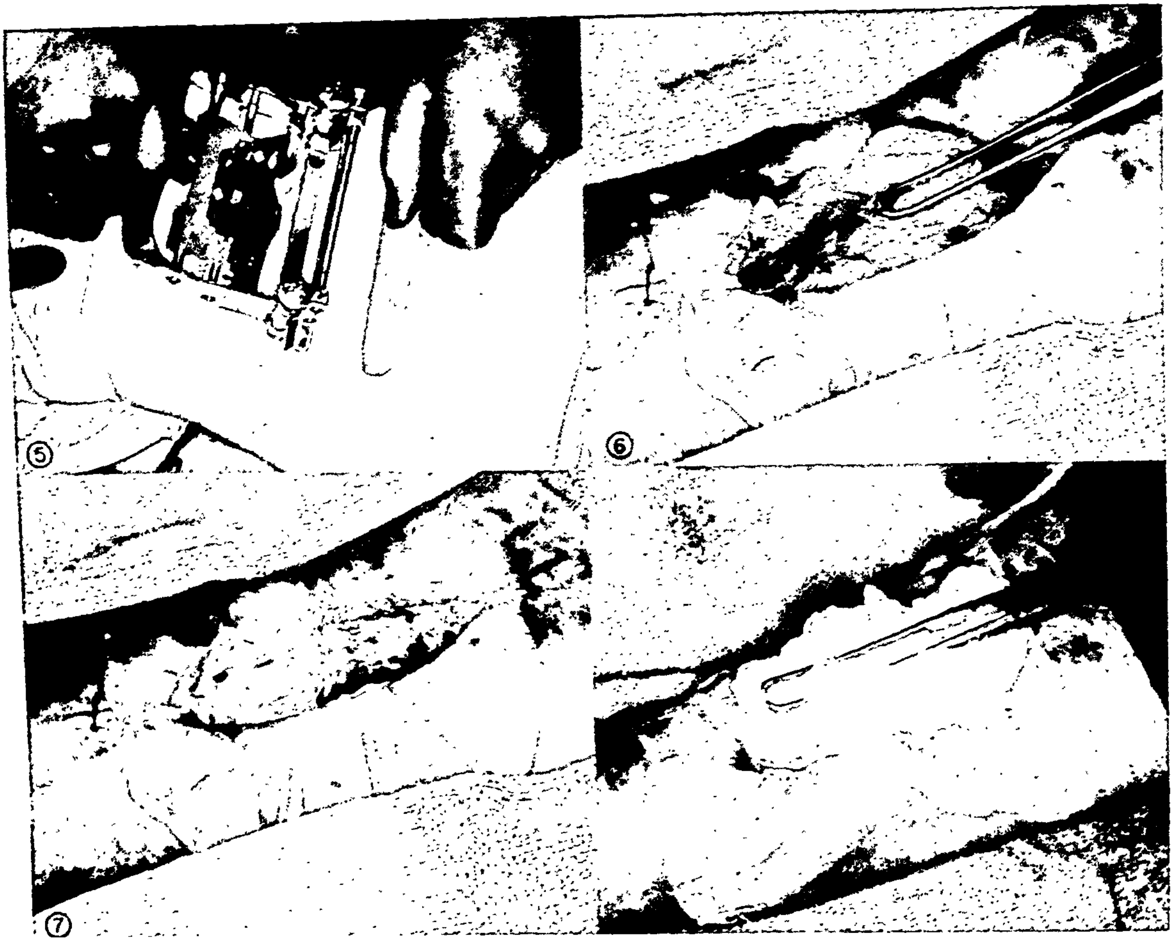
quate antibiotic control is necessary, depending upon the flora involved. Often it is necessary to wet-dress the wound several days before the operation and start general antibiotic care accordingly. General anesthesia and an adequate tourniquet are used.

The ulceration (Fig. 1) should be excised (Figs. 2 and 3) completely from the underlying bone. As much good skin coverage as possible should be left over the bone. It may be necessary to incise the skin above and below the bone area, which later can be sutured in order to gain better access to the contemplated area of saucerization. Adequate saucerization (Fig. 4) without overhanging edges should be done. The tourniquet can then be released and the bleeders at the edge of the skin tied off. A warm saline pressure pack is then placed into the saucerized wound during the time a 0.013-0.015 inch split thickness skin graft is being taken (Fig. 5) from the opposite thigh.

The pressure pack is then removed from the saucerized area. If by this time bleeding has been controlled, the adequate-sized "piecrusted" split thickness skin graft is stretched across the saucerized trough and gently placed (Fig. 6) so that it lies flush against bone in all areas (Fig. 7). One must work rapidly at this stage of the operation, so that no hematomas are left underlying the skin graft which, of course,



Figs. 1, 2, 3 and 4 (see text).



Figs. 5, 6, 7 and 8 (see text).

would spell disaster to the graft. If the oozing from the bone is slight, often the instillation of bovine thrombin into the wound immediately prior to the placing of the graft will help. A wet fluff is pressed over the skin graft to stretch it evenly and adequately into the saucerized area. This also helps to control bleeding. If the bleeding in the trough is excessive, tapping with a blunt instrument on the localized area will help close off these bleeders. Bone wax should not be used, as the split thickness skin graft will not "take" over the area so treated. If bleeding is too excessive to allow one to work safely with the skin graft, the tourniquet pressure should be replaced and the graft applied in the manner aforedescribed. Packing fluff into the trough (Fig. 8) should be more than adequate, and pads should be placed above this. Kling type pressure dressings are used, covered by elastic dressings, and plaster splinting for immobilization of the ankle area. The tourniquet is not removed until the pressure dressing is in place.

The initial dressing, unless high fever or marked infection with odor intervenes, is not done until the seventh or tenth day. The dressing must be done carefully at this stage, in order not to peel the skin off the bone. The wound is gently cleansed, hydrogen peroxide being used as a mechanical cleanser. Overlapping portions of skin graft can be excised to help cut down on drainage and possible infection at this

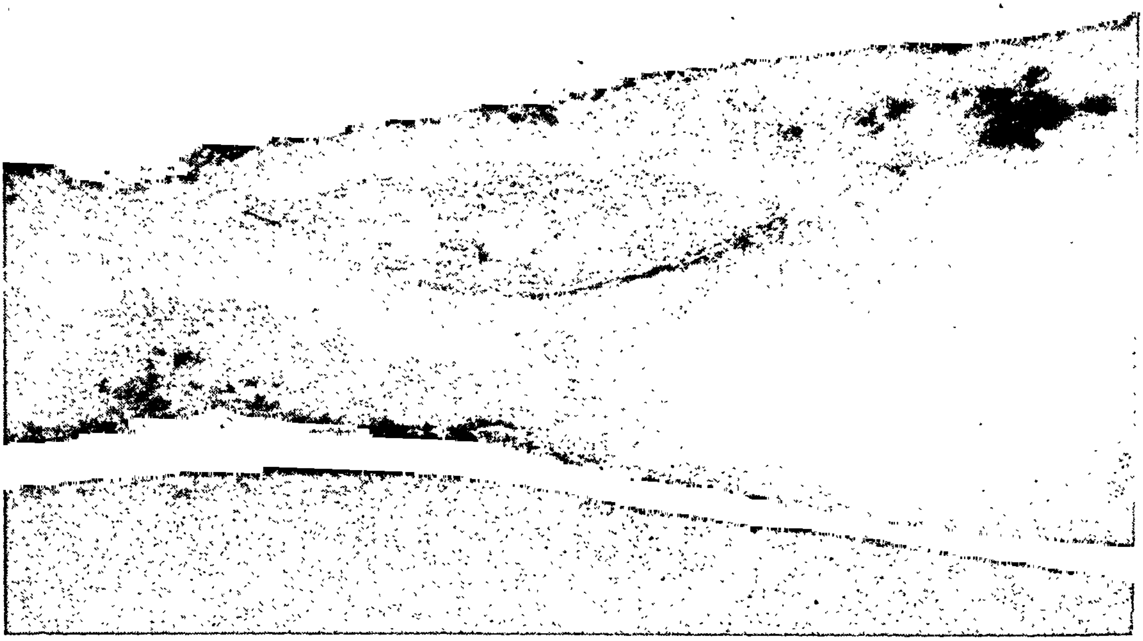


Fig. 9 (see text).

stage. If small hematomas are noted at this time, they should be gently expressed. A single-thickness petrolatum gauze dressing is then replaced over the graft and another pressure dressing applied. Adequate antibiotic control should be kept up throughout these procedures, depending upon the bacterial flora involved. Often local cleansing with neomycin solution in the depths of ulcer areas early in these procedures will be helpful.

The area is then redressed at adequate intervals. The patient is not allowed to be up, even if immediate good healing has taken place, until at least three to four weeks after the operation, in order to allow time for adequate circulatory support of the skin graft (Fig. 9). He should then be cautioned to use an elastic support of the lower extremity at all times when he is up and about and to be careful not to bump the involved area. In some of these cases this treatment is followed by tube pedicle or cross-leg flap procedures for more thoroughgoing coverage. In others, especially if the patient is elderly, I prefer leaving well enough alone.

Avoidance of Pitfalls.—I wish to reiterate that this method could easily fall into disrepute for a number of reasons. Meticulous attention, therefore, must be paid to the following factors:

1. Adequate antibiotic coverage.
2. Adequate excision of the ulcer without leaving a scar base on which to place the free skin graft (excision must be made straight down to the bone that is being saucerized).
3. Adequate saucerization, so that the free skin graft will touch only healthy, bleeding bone.
4. Adequate bleeding control, so that no

hematomas can be caught under the skin graft.

5. A thin split thickness skin graft adequately "piecrusted" (about 0.13-0.15 inch) in a large sheet, so that it can be stretched into the interstices of the saucerized trough. Sutures are not necessary, as the graft will overlap the wound edges and help hold the graft in proper position after it is packed into place.
6. Careful postoperative dressing, with adequate attention to frequent multiple dressings if necessary. After two or three weeks, occasional air-drying periods and local neomycin solution will help to accelerate healing.
7. Bed rest with the leg elevated, for at least three to four weeks after the operation. Ambulation should be gradual, with elastic support to the leg.

SCHLUSSFOLGERUNGEN

Der Verfasser berichtet über ein Behandlungsverfahren, von dem er hofft, dass es, um nicht in Misskredit zu geraten, mit peinlichster Beachtung aller Einzelheiten angewandt werden wird.

Die unverzügliche Anlegung einer Hautplastik auf einen flach freigelegten lange bestehenden chronischen osteomyelitischen Herd der Tibia kann einem Kranken, der jahrelang an chronischen Unterschenkelgeschwüren gelitten hat, von Nutzen sein.

Der Verfasser hofft, dass dieses Verfahren die zur Zeit fest eingewurzelte Behandlungsmethode ersetzen wird, die in flacher Freilegung des osteomyelitischen Herdes, Packungen mit Vaselingaze, endlosem Warten auf Granulation und späterem Versuch der Deckung des Defekts besteht.

CONCLUSIONS

L'auteur présente une nouvelle technique dont il espère qu'elle sera utilisée avec un grand soin dans les détails afin qu'elle ne tombe pas dans le discrédit.

Il s'agit de greffes cutanées au-dessus d'une dépression du tibia due à une ancienne ostéomyélite chronique, qui peuvent grandement soulager les malades ayant souffert pendant des années d'ulcérations chroniques des jambes.

Il est à souhaiter que cette méthode remplacera la technique actuelle réduite à ses derniers retranchements, avec pansements de vaseline et l'attente interminable de la granulation avec tentative ultérieure de revêtement.

CONCLUSOES

Apresenta um metodo que espera seja usado com cuidado para não cair no descredito. Enxertia de pele imediata nas curetagens da tibia para os processos cronicos de osteomielite com ulcerações antigas da perna.

Esse metodo poderá suplantar os sistemas antigos de tratamento alguns ainda em uso.

CONCLUSIONES

Se presenta un método esperando sea usado con meticulosa atención con el fin de que no vaya a caer en el descrédito. Se trata de injertos cutáneos sobre la tibia expuesta por osteomielitis crónica de larga duración con el fin de aliviar en el paciente que por muchos años ha sufrido de estas ulceraciones crónicas en la pierna. El método es de esperar ha de mejorar los métodos diversos que se vienen empleando en la actualidad.

The Proctologic Use of Topical Hydrocortisone

HENRY C. SCHNEIDER, M.D., F.A.C.S., F.I.C.S., D.A.B.
PHILADELPHIA, PENNSYLVANIA

PROCTITIS is a difficult problem therapeutically. With the advent of anti-inflammatory steroids, the systemic use of these agents has provided appreciable benefit. Clinical investigation of suppositories containing 10 mg. of hydrocortisone acetate for use in the treatment of patients who have various anal and rectal inflammatory lesions was conducted to determine the efficacy of their use in the practice of proctology.

Rectal suppositories containing 10 mg. of hydrocortisone acetate were evaluated clinically in 76 cases of inflammatory conditions of the anorectum. Topical hydrocortisone proved to be free from corticosteroid side effects, and its use was beneficial to 96 per cent of the patients treated. Good results were obtained by 78 per cent and fair results by 18 per cent. Only 4 per cent of the patients failed to respond to therapy.

The local application of hydrocortisone in a suppository base is far more practical and convenient than is the rectal drip method of administration.

Local hydrocortisone acetate may be used with noteworthy safety and is a desirable addition to proctologic therapeutics.

The efficacy and safety of hydrocortisone used locally in the rectum have been fully established by a number of investigators,[1] and for this reason it was not deemed necessary to use a placebo to establish this further. An active adrenocortical hormone, hydrocortisone (Kendall's compound F), is the major corticosteriod in human plasma. It appears to act directly on the body tissues to reduce their responses to acute inflammation.

The efficacy of hydrocortisone administered rectally to patients who have chronic *ulcerative colitis and irradiation proctitis* is well established. When hydrocortisone acetate is instilled locally into the rectum in therapeutic dosage, the plasma level of Compound F and its urinary metabolites do not significantly increase.[2] Topical hydrocortisone, therefore, should permit more thoroughgoing treatment of patients who have proctitis and, in addition, permit the use of hydrocortisone in the treatment of patients for whom oral or parenteral steroid therapy is contraindicated. Antibiotics, used topically, may of themselves cause factitial proctitis, and, because they offer no benefit to many patients,[1d] it was considered best to use none unless specifically designated.

Method.—A formula* containing hydro-

Read at the Twenty-Fourth Annual Congress of the North American Federation, International College of Surgeons, Chicago, Sept. 13-17, 1959.
Submitted for publication Aug. 13, 1959.

*Wyanoids® HC, available from Wyeth Laboratories, Inc., Philadelphia.

cortisone acetate, 10 mg., and other soothing ingredients (extract of belladonna, 0.5 per cent; ephedrine sulfate, 0.1 per cent; *zinc oxide; boric acid;* bismuth oxyiodide; bismuth subcarbonate, and balsam peru in an oleaginous base) in a suppository base was used for the treatment of 76 patients who had various forms of proctitis and inflammatory reactions of the anoderm.

Of the 76 patients, 11 had pruritus ani (complicated by internal and external hemorrhoids in 1 and by mild proctitis in 1). Six had proctitis (2 general, 2 low grade, 1 in the lower portion of the rectum, 1 postoperative). Three had irradiation proctitis (complicated in 1 by a fissure and carcinoma of the rectum and pelvis, and in another carcinoma of the vagina). Nine had chronic ulcerative colitis (4 in Stage I, 2 in Stage II, 2 in Stage III and 1 with pseudopolyp formation). Forty-seven had postoperative inflammatory reactions (complicated by delayed healing, pain, pruritus, cryptitis or various inflammatory conditions).

It was recognized that the local use of this medication would be easier, attended by fewer side effects and more economical than the rectal drip method of administration.

One or two hydrocortisone suppositories daily were prescribed for varying periods of time to determine the usefulness of this form of therapy. The efficacy of topical hydrocortisone was designated as *good, fair,* or *none,* depending on the degree of improvement attained.

RESULTS AND COMMENT

The duration of therapy for the 76 patients ranged from twelve to sixty days. The average duration of therapy was twenty-six days (Table 1). Seventy-three patients improved after topical hydrocortisone therapy. Side effects from the hydrocortisone therapy did not occur in any of the patients.

TABLE 1.—*Duration of Therapy*

Diagnosis	*Number of Patients*	*Therapy Period (Days)*	*Average Duration (Days)*
Pruritus ani	11	14-48	29
Proctitis	6	12-48	28
Irradiation proctitis	3	12-60	28
Chronic ulcerative colitis	9	12-57	27
Postoperative inflammatory reactions	47	12-37	19
Total	76		
Average		12-48	26

TABLE 2.—*Results of Therapy*

		Results		
		Good	*Fair*	*None*
Diagnosis	*Number of Patients (Total)*	*Number of Patients*	*Number of Patients*	*Number of Patients*
Pruritus ani	11	6	3	2
Proctitis	6	6	0	0
Irradiation proctitis	3	1	1	1
Chronic ulcerative colitis	9	9	0	0
Postoperative inflammatory reactions	47	37	10	0
Total	76	59	14	3

Pruritus Ani.—The duration of therapy was from fourteen to forty-eight days for the 11 patients in this group. The average duration was twenty-nine days. The response to medication was *good* in 6 (55 per cent) and *fair* in 3 (27 per cent). Two patients (18 per cent) failed to respond to therapy.

Topical hydrocortisone was a helpful adjunct in the treatment of most of the patients who had pruritus. There were several cases in which the cause of pruritus probably was proctitis. In these instances it helped to ameliorate the pruritus by relieving the primary cause. The topical hydrocortisone also was beneficial in the treatment of patients who had pruritus ani and proctitis as a result of candidiasis (moniliasis) which had developed after the use of oral antibiotics. The inflammatory response of tissues to Candida (Monilia) causes an exudate that irritates the perianal skin. Hydrocortisone reduced the inflammatory response and thereby lessened the irritation.

Benefits obtained in the treatment of patients who have pruritus ani probably have been the result of a reduction of inflammatory response in the lower portion of the rectum. The hydrocortisone suppositories decreased itching and soreness in the anal canal and alleviated the burning sensation and feeling of uneasiness. For the patient who had pruritus ani complicated by internal and external hemorrhoids, topical hydrocortisone helped to control itching and soreness in the anal canal. Injection treatments were adequate in controlling the hemorrhoids.

Proctitis.—The response of the 6 patients who had proctitis to the administration of topical hydrocortisone was excellent. One patient, who had low-grade proctitis, was greatly improved with the use of only twelve doses. The average duration of therapy for this group was twenty-eight days. The range was from twelve to forty-eight days. One patient, who had proctitis from postoperative scar tissue, improved rapidly after the institution of therapy. The inflammation was greatly reduced in another patient, who had proctitis as a result of eating spicy food.

Irradiation Proctitis.—Of the 3 patients in this group, the response to the administration of topical hydrocortisone was *good* in 1 and *fair* in 1. One patient did not respond. The duration of therapy was from twelve to sixty days and averaged twenty-eight days. It was observed that topical hydrocortisone markedly reduced bleeding, pain and discharge when the spread of malignant disease was not involved. Continuous treatment was necessary, and one or two doses daily, in the morning and at bedtime, were often sufficient. The patient who failed to respond to therapy had irradiation proctitis complicated by fissures, as well as carcinoma of the rectum and pelvis. At the time of examination of this patient the disease was terminal, and medication was ineffective. Bleeding was somewhat lessened for 1 patient who had irradiation proctitis complicated by carcinoma of the vagina, but the overall response was only fair.

According to Sherman[1a] topical application of hydrocortisone often produced improvement in early irradiation lesions but was less successful in the treatment of long-standing changes that involved the rectum. Local hydrocortisone given to a few Grade I and Grade II patients, who had experienced early changes without evidence of perforation or marked telangiectasis, produced excellent results.[1a]

Although the symptomatic effects may appear dramatic, local hydrocortisone may not always prevent the extension of irradiation proctitis, which has a chronic course. Often, however, it effectively controls acute episodes and the associated symptoms. This was the situation encountered with the remaining patient in this group. She had a good response to therapy over a sixty-day period, with marked lessening of pain, bleeding and redness. The disease finally became terminal, however, and the patient was not seen again for reappraisal.

Chronic Ulcerative Colitis.—The response to medication of all 9 patients in this group was good. The duration of therapy was from twelve to fifty-seven days. The average duration of therapy was twenty-seven days.

Four of the patients had chronic ulcerative colitis in the first stage. One of the 4 patients had a flare-up in the lower 5 inches (10 cm.) of the rectum, but this subsided after treatment. In the second patient there was moderate activity in the lower portion of the rectum, which improved considerably after local hydrocortisone was used. In the third patient in this group there was a granular appearance above the anorectal line. The use of *the suppositories completely* controlled the symptoms. A marked improvement was noted in the fourth patient. There was a reduction in mucous discharge, disappearance of bleeding and rapid control of the flare-up.

There was marked improvement locally when medication was used, that is, lessened bleeding and mucous discharge, in 1 of the 2 patients who had chronic ulcerative colitis in the second stage. Within one month the other patient obtained pronounced improvement of ulcerations in the lower portion of the rectum.

For the 2 patients who had chronic ulcerative colitis in the third stage there was marked improvement, little to no bleeding, and a decreased discharge of mucus, and the symptoms were easily controlled.

The remaining patient in this group had chronic ulcerative colitis and nonspecific pseudopolyps. He obtained marked improvement. When medication was discontinued, the lower 2 inches (5 cm.) of the rectum again became irritated and therapy was reinstituted as required.

In many cases of low grade chronic ulcerative colitis extensive involvement does not occur, and occasional subacute exacerbations of the disease are easily treated medically. The patients remain ambulatory. More frequently, these patients have involvement in the rectum and possibly the lower portion of the sigmoid. There may be symptoms, such as rectal bleeding, involuntary passage of mucus, occasional passage of a few semiformed stools, and tenesmus. The use of one or two doses of the medicament daily frequently controls such subacute phases and dramatically minimizes the symptoms.

Topical hydrocortisone is considered of little value, however, when the transverse and ascending portions of the colon are involved. It has not been the policy to rely on this therapy in the severe culmi*nating stages of the disease.*

Local hydrocortisone has been advocated for chronic ulcerative colitis by Truelove[1c] and Watkinson,[1d] who have reported studies in which double blind technics and sequential analysis were used. Both investigators showed by sigmoidoscopic and histopathologic studies that improvement in the mucosa occurred after local use of hydrocortisone, and both have noted the advantages of topical medication containing 10 mg. of hydrocortisone. The results in this study confirm those obtained by these clinicians.

Postoperative Inflammatory Reactions.—One of the most useful effects of topical hydrocortisone was achieved in those patients who had appreciable scar tissue formation at the anorectal line, with consequent painful defecation after anorectal surgical procedures. In patients in whom a smooth funnel-shaped anal canal develops after the surgical procedure, with or without anal stenosis, there usually is some area that does not heal completely. This condition is chronic and difficult to ameliorate. Frequently the unhealed areas may require secondary anoplastic procedures.

The use of topical hydrocortisone for twelve to thirty-seven days gave almost immediate relief, with good or fair improvement in the tissue in all 47 cases. This was the largest group of patients studied. In 37 patients (79 per cent), the results were *good.* In 10 (21 per cent) the results were *fair.* In all instances the scar tissue was softened, pain was relieved and other related symptoms were ameliorated. In 3 cases in which there was an unhealed area, the results were *good* in 1 and *fair* in 2. In the 2 cases in which the results were only fair there was relief of pain and other symptoms, but the area did not heal.

It is to be emphasized that, in order to be helpful, treatment must be instituted as soon as possible after the development of postoperative scar tissue with inflammatory reaction. Except for its possible palliative effect, it is my opinion that topical hydrocortisone would be of little value in cases of chronic disease in which extensive scar tissue formation has become established.

SCHLUSSFOLGERUNGEN

Die Anwendung rektaler Suppositorien, die 10 mg. Hydrokortisonazetat enthielten, wurde klinisch an 76 Fällen mit entzündlichen Erkrankungen des Mastdarms und des Afters ausprobiert. Es zeigte sich, dass die örtliche Anwendung von Hydrokortison zu keinerlei kortikosteroiden Nebenerscheinungen führte und sich bei 96 Prozent der behandelten Patienten als nützlich erwies. Die Erfolge waren gut in 78 Prozent und leidlich in 18 Prozent. Nur in vier Prozent der Fälle versagte die Behandlung.

Die örtliche Hydrokortisonverabfolgung in Form von Zäpfchen ist viel praktischer und bequemer als die Behandlung mit Tropfeinläufen.

Die örtliche Anwendung des Hydrokortisonazetats ist von bemerkenswerter Unschädlichkeit und stellt einen wünschenswerten Zusatz im therapeutischen Rüstzeug des Proktologen dar.

CONCLUSIONES

En 76 casos de condiciones inflamatorias anorrectales se ha estudiado clínicamente la acción de supositorios con 10 mg. de acetato de hidrocortisona. Se ha demostrado que la hidrocortisona tópicamente está libre de los efectos secundarios del corticosteroide y su uso ha sido benéfico en el 96% de los enfermos tratados; de éstos, 78% fueron resultados excelentes y 18% de simple mejora.

Es mucho más práctica la aplicación local de hidrocortisona en supositorios que la administración rectal gota a gota. El uso local de la hidrocortisona puede ser sorprendentemente seguro, y una adición excelente a la terapia proctologica.

CONCLUSIONS

Une étude clinique quant aux résultats de l'application de suppositoires rectaux contenant 10 mg d'acétate d'hydrocortisone a été faite dans une série de 76 cas. En application locale l'hydrocortisone s'est révélée exempte d'effets secondaires corticostéroïdes et s'est montrée utile chez 96% des malades traités. De bons résultats ont été obtenus dans 78% des cas, des résultats satisfaisants dans 18%; seuls 4% des cas n'ont pas réagi à ce mode de traitement.

Cette thérapeutique (hydrocortisone locale sous forme de suppositoires) est plus pratique et plus agréable pour le malade que l'administration par goutte-à-goutte rectal.

L'acétate d'hydrocortisone locale peut être utilisée avec une sécurité remarquable et c'est une adjonction souhaitable aux thérapeutiques touchant à la région rectocolique.

CONCLUSOES

Avalia os resultados obtidos com os supositorios á base de lomgrs. de hidrocortisona em 76 casos de molestias ano-retais. A substancia em uso local mostrou ser desprovida de efeitos corticoesteroides colaterais em 96% dos casos tratados. Obteve bons resultados em 78% e satisfatorios em 18%. Somente 4% não tiverem resultado. A aplicação em supositorio é mais pratica e conveniente que o metodo gota á gota. O acetato pode ser usado com segurança e representa um meio terapeutico muito bom na protologia.

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Man has done nothing more than imitate scientifically the mechanism of natural defense used by animals. Lecomte de Nouy (quoted by Jentzer) said: "The criterion of adaptation is usefulness, while the criterion of evolution is freedom." The error of early research and conclusions was to mistake evolutional features for vital phenomena. Instead of exalting means of defense—which often accelerate exhaustion of cells and precipitate death—the new artificial hibernation deprives us temporarily of our freedom through a neurovegetative block of harmful reactions, and gives the hibernating organism a period of repose and sleep during which to recover and save its life.

Laborit and his collaborators have led us into a vast mansion of mysterious shadows—artificial hibernation—and have opened some of its treasure rooms that they may be explored by investigators the world over. We stand on the threshold of a new era of research into vegetative and endocrine phenomena, perhaps also into new psychiatric methods, with the consequent widening of our knowledge of biology and human pathology. Artificial hibernation does not correct Claude Bernard. It broadens the horizon he described and provides a new theory and promising tools for the research biologist, so that he may constantly progress toward that ideal of happiness—unattainable in medicine—enjoyed by the man who knows the cause of things. For, as Vergil said, *Felix qui potuit rerum cognoscere causas.*

Marti-Ibañez

Selection of Operative Procedures for Ulcerative Colitis and Familial Polyposis

CON AMORE V. BURT, M.D., F.A.C.S., F.I.C.S.
NEW YORK CITY, NEW YORK

THE symptoms and disability associated with colitis are due to the toxic effect of the retained diseased bowel. Most colonic surgeons are convinced that all of the diseased bowel must be removed before the patient is restored to normal health. After operation the vast majority of these patients return to a normal life in their families, their occupations and social activities. There is a striking difference in the appearance of the patient who has had the diseased bowel removed and that of the one who still has a large area of infected bowel continuing to exert its debilitating effect.

The results of the surgical management of colitis have greatly improved over the past fifteen years, and far more patients are being referred for earlier surgical intervention. The Brooke ileostomy and the fitting of the bag at the end of the operation have almost eliminated the complications of ileostomy. The great majority of patients are completely rehabilitated and are able to return to a relatively normal life in their families, occupations and society.

The most important indications for operation and the procedures generally used are discussed.

The morbidity and mortality rates of intestinal surgery have been greatly reduced with a better understanding of bowel preparation with neomycin and the sulfonamides and tetracycline drugs, estimations of blood volume, control of fluid and electrolyte balance, correction of nutritional deficiencies, improved anesthesia and the free use of whole blood. These improvements have almost entirely eliminated the multiple-stage procedures in surgical treatment of the colon.

The improved construction of the ileostomy as first carried out by Brooke[1] has eliminated the debilitating effects of the old conventional ileostomy, including nutritional, fluid and electrolyte problems. Well-fitting plastic or rubberized bags are placed around the ileostomy immediately after the operation. This has made the patient much more comfortable and his condition compatible with most social and occupational requirements.

As a result of these important factors there has evolved a much more understanding attitude on the part of the gastroenterologist and the internist. In recent years they are referring an increased number of their patients with colitis for early operation. This should further lower the mortality rates.

In about 75 to 80 per cent of cases, chronic ulcerative colitis undergoes remission in the hands of the gastroenterologist with the proper use of steroids (androgens and estrogens), whole blood, chloromycetin, sulfonamides and adequate general common sense management. Diet does not play an important part, except

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Read at the Twenty-Fourth Annual Congress of the North American Federation, International College of Surgeons, Chicago, Sept. 13-17, 1959.
Submitted for publication Aug. 28, 1959.

for the few patients who are allergic to milk or other proteins. About 25 to 30 per cent of the patients with the chronic condition will require surgical intervention. The incidence of carcinoma in association with chronic ulcerative colitis has been variously reported as ranging from 2.5 to 11 per cent. Probably the average is 4 to 5 per cent. There is a higher incidence of carcinoma in the cases of long standing colitis—say those with a duration of ten years or more.

The development of surgical therapy for ulcerative colitis really began about 1875, when Wilks and Moxon[2] called attention to colitis as distinguished from other diseases characterized by chronic diarrhea. Mayo Robson,[3] in 1893, reported doing inguinal colostomy, with local treatment of the ulcerated surfaces. Ileostomy, cecostomy and appendicostomy were subsequently used in the same way for irrigation of the diseased colon with various medications.

By 1913 John Young Brown[4] and others were suggesting terminal ileostomy as a means of putting the inflamed colon at rest. As recently as ten years ago, ileostomy alone was performed fairly often as a palliative or life-saving procedure and often as a preliminary to total colectomy for colitis. A few good surgeons still maintain that it should be done for the very ill patients.

In the early 1940's it became apparent that many chronically ill patients with disability, anemia, arthritis, etc., could not hope to be restored to a relatively normal life until the entire diseased portion of the bowel had been removed, for it was realized that the symptons were due to the retention of the diseased bowel. At that time total colectomy and abdominoperineal resection were done in three or four stages.

By 1949 the aggressive surgical management of colitis had progressed to the point at which many surgeons were doing ileostomy and subtotal colectomy, followed by abdominoperineal resection of the rectum in three to six months, while others were performing ileostomy and complete coloproctectomy in one stage. Some were advising emergency resection of the entire colon for acutely ill patients. Someone has said, and I most heartily agree, that many of these patients with acute fulminating disease are "too sick *not* to be operated upon."

Ileoanal anastomosis has been done in cases of colitis, multiple (familial) polyposis and megacolon, but this procedure has been discontinued because of its technical difficulties and its many complications. Ileoproctostomy has been done in recent years for polyposis and colitis, and it is now recommended occasionally in cases of colitis when there is little, if any, involvement of the rectum. In my experience such cases are extremely rare, and I do not personally anastomose to a diseased rectum.

Vagotomy has been used for ulcerative colitis, with various results. In perhaps one-half of the patients there is some temporary relief from frequent watery bowel movements. Occasionally there is dramatic cessation of diarrhea. Vagotomy does not affect the basic pathologic process, and I have discontinued its use.

A note at this point on sexual function is apposite. Whenever the rectum is removed for colitis it is extremely important to preserve the entire sphincter mechanism, with minimal injury to the nervi erigentes, so that normal sexual powers may be retained. This conservative removal of the rectum hastens wound healing.

In the majority of instances of colitis the morbidity rate is lower with the one-stage procedure. I have some reason for pause, however, in this respect. Several years ago, at Presbyterian Hospital, 2 patients about 30 years of age died rather suddenly, of what suggested a cardiac condition, about one week after ileostomy and one-stage coloproctectomy. Autopsy failed to reveal the cause of death in either case. Since that time I have done ileostomy and subtotal colectomy, followed in three to six months by an abdominoperineal resection.

Few surgeons have had sufficient personal experience in operating for ulcerative colitis to express positive opinions with respect to the procedures that should be used. It is helpful, however, to consider the opinions of some of the men who have had more than average experience with this disease. Some of the opinions are here presented, in various categories.

Acute Fulminating Colitis With or Without Perforation, Which Has Not Responded to One to Two Weeks of Medical Management. — Bacon[5] prefers a one-stage ileostomy and coloproctectomy; Cattell[6] does a preliminary ileostomy and defers colectomy; Dixon[7] establishes a double barrel ileostomy with the region under local anesthesia; Garlock[8] prefers ileostomy alone, or ileostomy and, in some selected cases, subtotal colectomy, with some increased risk. Mayo[9] states: "Unless there was some good reason opposed to surgical treatment, I would perform abdominal colectomy and remove the rectum from above, at least to the levator muscles, close the pelvic peritoneum and drain through the anus with a sump suction drain." Ochsner[10] does ileostomy and colectomy. He would not continue on medical management for more than one week. Ravitch[11] performs one-stage pancolectomy and abdominal ileostomy; Ripstein,[12] ileostomy with subtotal colectomy to the level of the rectosigmoid. In his opinion, if there is perforation in the rectosigmoid, total colectomy may be necessary. The rectal stump is transected and buried beneath the peritoneum. When the rectum is the site of perforation or severe hemorrhage, abdominoperineal resection is indicated in addition to ileostomy and colectomy; Thompson and Cave[13] do total coloproctectomy in one stage with the patient under hypothermia. My own experience has caused me to perform ileostomy and subtotal colectomy and to defer the abdominoperineal resection.

Ileoproctostomy For Chronic Ulcerative Colitis With Diffuse Involvement of the Rectum.—In October 1939, Garlock,[14] reporting to the New York Surgical Society, suggested that "it might become possible in the occasional case to take down the ileostomy and connect it with the rectal segment."

Aylett[15] reported, in 1956, 100 cases of diffuse ulcerative colitis in which he removed the entire colon, following this by an ileorectal anastomosis with a temporary ileostomy above. On the basis of his clinical experience, he contended that the rectal ampulla shows minimal involvement in the majority of patients, while the rectosigmoid and sigmoid present greater ulceration and deformity owing to the separate nerve supply of the rectum. He reasoned further that the increased inflammation in the rectum is due to the "dripping down" of infected material from the ulcerated area above.

This is in direct contrast to everything that has been taught and accepted by the authorities on ulcerative colitis. Most experienced men are convinced that the disease begins in the rectum and ascends into the colon. In patients with early involvement, when the disease has not progressed to the cicatrizing stage, it has been my experience in the vast majority of cases that the rectum is more involved than the colon above. Bacon and Vaughn observed that the disease begins in the rectum in more than 90 per cent of cases.

Aylett[15] stated further that in the series he reported the diseased rectal segment healed after the ileorectal anastomosis and that further studies by serial biopsies showed surface healing of the mucosa. He granted, however, that the submucosal strutures cannot be expected to return to normal if they have been scarred by the disease process. This, of course, indicates that the bowel does not return to normal. He reported no recurrence of the proctitis.

Turnbull[16] reported on 14 patients on whom he has performed subtotal colectomy and ileostomy, followed in a year or more by an ileorectal anastomosis. He did no decompressive ileostomy at the time of the anastomosis. He stated further that the primary disability observed after ileoproctostomy consists of multiple daily bowel movements, which decrease in the first few weeks. Six of his 14 patients take antidiarrheal medication. Rectal disease, present at the time of anastomosis, healed in all but 3 of the 14 patients. In 4 of these cases the results were considered clinical failures. In 2 patients the rectal disease has failed to heal, and these patients are in moderately poor health because of frequent small bowel movements.

Bacon[5] is utterly opposed to ileoproctostomy in the presence of disease of the rectum. The rectum should never be preserved if it is or has been involved in any way. I have just torn down my fourth ileorectal anastomosis, even though the rectum appeared normal.

Cattell[6] does not favor anastomosis to a rectum that is diseased.

Mayo[9] reported on 30 patients on whom ileoproctostomy was performed. Sixteen underwent one-stage subtotal colectomy and ileoproctostomy, 11, two-stage procedures, consisting of ileoproctostomy followed later by subtotal colectomy, and 3 underwent multiple stage procedures, eventually undergoing ileoproctostomy. Seventeen of the 30 specimens showed involvement of the terminal ileum with chronic ulcerative colitis. He was able to follow up 22 of these patients. He concluded that there are instances, although rare, in which abdominal colectomy with ileoproctostomy is a justifiable procedure in cases of ulcerative colitis. Further, it is assumed, of course, that the operation is not performed in cases in which the disease has affected the rectum more than minimally. He prefers end-to-end ileoproctostomy over end-to-side anastomosis.

Ochsner[10] considers ileoproctostomy "useful in a small number of selected patients."

Ravitch[11] employs ileoproctostomy only in presence of little or no rectal disease.

Ripstein[12] stated: "Our results have not been too good. Seven operations with ultimate breakdown and ileostomy in four. In one case ileostomy was refused, although she now has a rectovaginal fistula. All in all 5 failures, 2 successes."

Thompson and Cave[13] stated that "all of our experiences with ileosigmoidostomy in ulcerative colitis indicate that it is not a good operation due to the danger of ascending ileitis and flare-up of disease in the sigmoid and rectum."

Many other surgeons have reported their experiences with ileoproctostomy for colitis, but space does not permit reference to their results. The opinions cited in the foregoing paragraphs are considered representative of surgical thinking at present.

Ileoproctostomy for colitis is obviously an experimental approach to a difficult disease, in an effort to maintain intestinal continuity. One must maintain an open mind. When a sufficient number of these operations has been done and enough time has elapsed, it will be possible to determine whether or not intestinal continuity can be maintained in the presence of active diffuse ulceration in the rectal ampulla. I venture to hazard the opinion that ileoproctostomy for colitis with diffuse proctitis will be largely discontinued, in the same way that ileoanal anastomosis has been discarded by most surgeons. Possibly there may be a few highly selected patients in whose cases the rectum is minimally involved and this procedure might be used. This is based upon the conviction that the disease ascends from the rectum and that the rectal condition is not secondary to a "dripping down" from the rectosigmoid area.

Indications and Procedures in the Surgical Treatment of Ulcerative Colitis.—The urgent indications for immediate operation are as follows:

1. Repeated massive uncontrollable hemorrhage, which may occur in the acute and chronic phases: It is my practice to perform ileostomy and subtotal colectomy except when the hemorrhage can be demonstrated as arising from the rectum, in which circumstances a total coloproctectomy with ileostomy in one stage is preferred.

2. Actual or impending perforation, with peritonitis: Impending perforation should be suspected if there is increasing abdominal distention associated with localized direct and rebound tenderness, especially if there is radiologic evidence of dilatation of the entire colon or a portion of it, in the absence of distention of the small bowel. One must be constantly on the alert for this complication if the patient has been given prolonged steroid therapy, which may mask the perforation. Ileostomy with subtotal colectomy is the operation of choice. It is my preference to defer abdominoperineal resection.

3. Acute fulminating (toxic) colitis which has not responded to conservative management in one to two weeks: This is a medical and often a surgical emergency. Fulminating colitis occurs in 2 to 3 per cent of the cases of ulcerative colitis. This incidence is slightly lower than that of carcinoma in association with colitis. Perforation may occur early in this disease and may go unrecognized if the symptoms are masked by steroid therapy. Ileostomy and subtotal colectomy should be done promptly, so as to remove most of the acutely infected bowel. It is my opinion that an unjustified risk is assumed by adding an abdominoperineal resection of the rectum when the patient is acutely ill. I do not advocate ileostomy alone in the emergency treatment of any of these patients. Severe toxemia, perforation, peritonitis and hemorrhage may take place even with an ileostomy alone.

Other important indications for surgical intervention are:

1. Chronic irreversible disease that has not undergone remission in two or three years of conservative treatment, with disability of the patient. The procedure usually employed under these conditions is ileostomy and coloproctectomy in one stage, although my preference is to defer abdominoperineal resection of the rectum for three to six months. In the highly selected case, with minimal or no involvement of the rectum (which in my experience is very rare) it may be possible to do an ileoproctostomy, preferably with a complementary ileostomy above.

2. Associated carcinoma or widespread polyposis: The association of carcimona with colitis is well known, particularly when the colitis is of long standing, say ten years or more. It is probable that the incidence of carcinoma with colitis is between 4 and 5 per cent. It has been variously reported at 2.5 to 11 per cent. This indicates an ileostomy and coloproctectomy in one stage.

3. Abscesses, intraperitoneal, resulting from perforation of the diseased colon: When these are incised, the result is fecal fistulas. These abscesses, however, should be drained, and a complementary ileostomy or colostomy is sometimes done. Resection of the bowel, including the fistula, should be carried out later, with the appropriate accompanying surgical measures —usually ileostomy and coloproctectomy.

4. Rectovaginal fistula: This results from perforation of the vaginal wall by an abscess in the septum. In no circumstances should the fistulas *per se* be excised. This would simply increase the size of the fistula. It should be included in the coloproctectomy.

5. Perianal and perirectal fistulas:

These, if extensive, contraindicate any attempt to preserve the rectum. They will not heal permanently. Attempt to remove them increases the inflammatory involvement and will further destroy the sphincters, with resultant anal incontinence. They may be removed locally if the proctitis can be cleared up, but no fistula should be operated upon in the presence of ulcerative disease or acute inflammation of the rectum. If there is no hope of clearing up the colitis, ileostomy and coloproctectomy are indicated.

It is to be hoped that the gastroenterologist and the internist will, through research and experimentation, find a cure for this disease that will make all of these operations unnecessary. Since colitis can be controlled in many instances with the steroids (estrogens and androgens) or cortisone in combination with various other medications, it may be that an explanation of the onset and control of the disease will be found in the steroids and other elements of the glands of internal secretion. Sooner or later, in my own opinion, medicaments will be found that will control or even cure ulcerative colitis, with an effect similar in many respects to that of the anticholinergics on duodenal ulcer.

Ileoanal Anastomosis for Colitis, Megacolon or Familial Polyposis.—Bacon[5]: "I have had no experience with anal anastomosis."

Cattell[6]: "We do no ileoanal anastomosis."

Dixon[7]: "Those cases I have are no good, that is, they're back to diaper stage."

Garlock[8]: "I have not been too happy with this operation because of the lack of control and the technical difficulties."

Mayo[9]: "My experience with ileoanal anastomosis for colitis, megacolon or familial polyposis has been confined mostly to taking down this operation that another surgeon has performed and establishing an ileostomy. I could not recommend ileoanal anastomosis with a clear conscience."

Ochsner[10]: "Ileoanal anastomosis is an unsatisfactory procedure."

Ravitch[11]: "Anal ileostomy continues to prove entirely satisfactory for polyposis. It can be made to work and has given a few excellent long-term results in ulcerative colitis, but the yield is probably inadequate to justify the operation." This opinion is based upon 9 cases of one-stage pancolectomy with anal ileostomy in cases of polypoid adenomatosis and 4 cases of anal ileostomy after one-stage pancolectomy for ulcerative colitis.

Ripstein[12]: "The results have been good in megacolon and polyposis, and I think this is a very satisfactory procedure. In ulcerative colitis I have reservations because the inflammatory disease so often involves the rectum and perirectal tissues."

Thompson and Cave[13]: "We would prefer to leave in the rectum for familial polyposis. We think it is a poor operation for ulcerative colitis. We do not think it is necessary for the treatment of megacolon."

My own experience with ileoanal anastomosis has been extremely bad, and I have discontinued its use because of the technical difficulties, loss of anal control and other complications.

Hiatt[17] has been good enough to permit me to include 4 of his cases in which coloproctectomy with ileoanal anastomosis was done at Presbyterian Hospital in 3 cases for megacolon and in 1 for ulcerative colitis.

Megacolon: 1. M. F., 16 years old, ten-year follow-up; three to five bowel movements a day; no disability. 2. J. R., five-year follow-up; three to five bowel movements a day; nutritional anemia. 3. Mrs. M., five-year follow-up; two to four bowel movements a day; seepage at night, for which she has to wear a pad.

Ulcerative Colitis: I. Z., eight-year follow-up. "This is the only really unsatisfactory case which I have had, in that he has nine to fifteen stools a day and leaks copiously at night. We are contemplating an abdominal ileostomy.

"I have had 4 cases of coloproctectomy with ileoanal anastomosis done at Presbyterian Hospital, 2 for multiple (familial) polyposis and 2 for ulcerative colitis. Because of complications, all of these had to be taken down and a permanent abdominal ileostomy established."

Multiple (Familial) Polyposis: 1. C. K., aged 23 years, presented multiple polyps involving the entire colon and rectum. After the coloproctectomy and ileoanal anastomosis, a peri-ileal pelvic abscess developed and was drained. Because of constant leakage a chronic granulomatous process developed in the entire perianal area. This proved to be incompatible with normal existence. Two years after the anal ileostomy was done it was taken down and an abdominal ileostomy was established, with Noble plication of the lowermost two-fifths of the small bowel because of dense adhesions. Numerous complications followed the original operation. Since the abdominal ileostomy was done almost eight years ago, the patient has been well and working, and has produced at least one child.

2. M. L., aged 30 years, had multiple polyps involving the entire colon and rectum. After the coloproctectomy and ileoanal anastomosis, large peri-ileal and perianal abscesses and fistulas developed, with marked excoriation of the perianal skin and induration of the buttocks bilaterally. Because of the persistent fistulas and constant drainage with severe excoriation, an abdominal ileostomy was done almost nine years ago. Some polyps of the terminal ileum developed, for which operation has been recommended. The patient is in good general health and prefers to wait.

Ulcerative Colitis: 1. E. S., 43 years old, had advanced ulcerative colitis with marked fibrosis of the entire colon and rectum. She had undergone some operations for *fistulae in ano* previously. These compromised the sphincter mechanism, although at the time of colectomy and ileoanal anastomosis the sphincters seemed to be functioning well. After the ileoanal anastomosis, anal stenosis and loss of sphincter control developed. This resulted in marked perianal excoriation. The anal ileostomy was taken down more than eight years ago, with excision of the distal three feet of the terminal portion of the ileum because of dense adhesions in the pelvis and bilateral salpingo-oophorectomy for cystic disease. Subsequently excision of an anopelvic sinus tract and, later, repair of an incisional hernia became necessary. The patient is now well.

2. P. H., aged 29 years, had undergone a double-barreled ileostomy elsewhere. This was closed, and a total colectomy with ileoanal anastomosis was done. The patient "felt fine, off and on," for about four years while she was taking codeine and probanthine. She had several movements during the day and had to get up three or four times a night. She failed to gain weight and finally decided that she would be better off with an abdominal ileostomy. This patient has been in good health since the abdominal ileostomy was established five and one-half years ago.

Because of these 4 experiences I believe there is no place for ileoanal anastomosis in the treatment of ulcerative colitis and multiple polyposis. Hiatt[17] agrees that it is not a good operation for colitis. My experiences, however, are too limited to permit any definitive answer.

Familial Polyposis of the Colon and Rectum.—This is a hereditary disease, transmitted according to mendelian laws. Dukes[10] stated that "those who inherit it will transmit it to one-half of their children eventually" and that "there are rarely any symptoms of intestinal disease until the second decade of life." In a group of 38 patients he noted that the average age at onset of symptoms was 21 years. There are no symptoms until the polyps have developed. These polyps may be discovered by sigmoidoscopic examination before there has been any clinical manifestation.

Mayo, DeWeerd and Jackson[18] noted that in some cases symptoms did not appear until perhaps ten years after the initial appearance of the polyps. They stated: "The malignant potentialities of each individual polyp, when multiplied by the myriads of polyps present, make this disease the most dangerous precursor of malignancy known. It is no exaggeration to say that every person with untreated, diffuse polyposis of the colon will die of carcinoma of the colon before he reaches the age of 50 years or will have advanced malignant disease of the colon when he reaches the age of 50 years."

Dukes[19], from the standpoint of carcinoma control, divided familial polyps into three stages. The first stage may last throughout childhood, but there are no symptoms, and sigmoidoscopic examination will not reveal any abnormality. In the second stage the polyps are developing but have not caused any symptoms. Sigmoidoscopic study will reveal the polyps. In the third stage, signs and symptoms of the disease are present. Close observation is important, because surgical treatment will soon be necessary.

Heretofore it has been the consensus that polyps will develop into carcinoma, and it is generally agreed that there is a a close association between polypoid and carcinomatous disease. Recently, however, several authors have expressed some doubt. Dukes[19] stated: "Not only does cancer very frequently follow clinical polyps but it is also very insidious in its onset, not at first giving rise to any characteristic or distinctive symptoms."

Dukes[19] agreed fully with Neel, Bolt and Pollard,[20] who stated: "Any person with polyps above the age of 25 is clearly within the danger zone." He also agrees with Dockerty,[21] who said: "About 50 per cent of the patients who have familial polyposis are likely to harbor infiltrating colon carcinoma by the time they have reached the age of 30."

The first clear description of true familial polyposis (adenomatosis) was presented by Luschka in 1861, according to Mayo and Wakefield.[22]

In 1901 H. Lilienthal[23] made the first bold surgical approach to polyposis when he did an ileosigmoidostomy, followed later by resection of the colon down to the area of anastomosis. Fulguration of the polyps of the rectum was not done. Nineteen years later the patient was reported alive and well. In 1918 Lockhart-Mummery[24] successfully did the same procedure with fulguration of the polyps in the rectal segment. In 1926 Coffey[25] reported doing an ileostomy in 1922, followed in 1924 by removal of the colon and rectum in stages. In 1930 Rankin[26] preferred permanent ileostomy with total coloproctectomy, while in 1937 he advocated ileosigmoidostomy with retention of the rectum. Boehme[27] stated that the first one-stage total colectomy with preservation of the rectum seems to have been done by Hickman[28] in 1932, although it was not reported until 1944. Boehme[27] reported 7 cases in which end-to-end anastomosis of the ileum to the rectosigmoid was done after preliminary fulguration of the polyps in the rectum and rectosigmoid. No patient in this series had more than 3 stools in twenty-four hours.

Bacon[29] has expressed preference for ileostomy and coloproctectomy because of the high incidence of carcinoma. This is based upon a report of 59 patients, 71.7 per cent of whom showed initial carcinoma. Secondary carcinoma developed in retained segments of bowel in 4 of a possible 16 instances (25 per cent). In the "benign group" of 13 patients with adenomatosis, carcinoma developed in the retained segment of a possible 7, or 71.4 per cent.

Cattell[9] performs subtotal colectomy with ileoproctostomy. with fulguration of the rectal polyps.

Dixon[17] does subtotal colectomy and anastomoses the ileum to the rectosigmoid. later fulgurating the polyps.

Garlock[8] stated that if the rectum is not too extensively invaded he does a subtotal colectomy with a temporary ileostomy and exteriorization of the sigmoid. The polyps are fulgurated through the anus and the sigmoid opening. When all of the polyps are removed (in three to six months) the ileostomy is taken down and reconnected to the sigmoid by an end-to-end anastomosis. When the rectum is hopelessly involved by myriads of polyps that cannot be removed by fulguration, total coloproctectomy is done, with a permanent ileostomy. In some cases it may be possible to ream out the mucosa and submucosa of the rectum so as to permit an ileoanal anastomosis. "I have not been too happy with this operation," he has said, "both from the standpoint of the lack of control and the technical difficulties."

Mayo[9] fulgurates the polyps of the rectum prior to colectomy and end-to-end ileoproctostomy. Proctoscopic examinations are repeated every six months, with fulguration of any polyps that make their appearance. Abdominoperineal resection is done if carcinoma is present.

Ochsner[10] stated that he does a "colectomy and anastomosis of the ileum to the rectum in intelligent patients who will return every three months for proctoscopy. In those who will not return, colectomy and abdominoperineal."

Ravitch[11] performs one-stage pancolectomy and anal ileostomy.

Ripstein[12] does total colectomy with ileoanal anastomosis or permanent abdominal ileostomy.

Thompson and Cave[13] prefer total colectomy with ileoproctostomy or ileosigmoidostomy. Sigmoidoscopic study is done at regular six-month intervals with fulguration of any recurrent or persistent lesions.

Because in most cases myriads of polyps are present, it is my practice to do ileostomy and coloproctectomy.

It is generally agreed that familial polyposis may be handled surgically by (1) permanent ileostomy and total coloproctectomy or (2) subtotal colectomy and ileoproctostomy in the absence of carcinoma of the rectum, with fulguration of the polyps in the retained rectal segment. Most authors prefer the latter procedure, although a few advocate coloproctectomy with ileoanal anastomosis.

Close observation must be maintained throughout life, so that any polyps that persist or develop in the future may be destroyed promptly. This may prevent carcinoma from developing in the remaining segment. Hubbard[30] recorded a case of multiple polyposis in which the polyps disappeared spontaneously from the rectal segment after colectomy. Duke[19] has also observed this at St. Mark's. He stated: "If surgical treatment is necessary and is carried out at an early stage, it generally will be possible to avoid permanent colostomy or ileostomy."

CONCLUSIONS

The results of the surgical management of colitis have greatly improved over the past fifteen years, and far more patients are being referred for earlier surgical intervention. The Brooke ileostomy and the fitting of the bag at the end of the operation have almost eliminated the complications of ileostomy. The great majority of patients are completely rehabilitated and are able to return to a relatively normal life in their families, occupations and society.

The most important indications for operation and the procedures generally used are as follows:

1. Acute fulminating toxic colitis, including that associated with actual or impending perforation with peritonitis, is a medical emergency and requires prompt surgical attention if conservative treatment is not effective within one week. It is the author's practice to do an ileostomy and subtotal colectomy to remove most of the diseased bowel. Abdominoperineal resection is deferred. A few authorities do an ileostomy alone; others do total coloproctectomy with a permanent ileostomy.
2. Massive uncontrollable hemorrhage requires ileostomy and subtotal colectomy except when the hemorrhage can be demonstrated to have arisen in the rectum, in which circumstances ileostomy and proctectomy are indicated.
3. Chronic irreversible colitis with disability of the patient, intractable to medical treatment, indicates, in the majority of instances, permanent ileostomy and

coloproctectomy. A number of reports, however, indicate that there are rare cases in which the colon is only minimally involved, in which an ileoproctostomy may be performed with good results. Much more time and experience will be necessary to determine whether this procedure can be used in a significant number of cases.

4. Rectovaginal fistula *per se* should not be operated upon in the presence of ulcerative colitis. This usually requires ileostomy and coloproctectomy.

5. Perianal and perirectal fistula should not be removed in the presence of ulcerative colitis. If a remission of the colitis cannot be induced, these fistulas should be included in the definitive coloproctectomy.

With regard to ileoanal anastomosis, 3 cases of ulcerative colitis and 2 of familial polyposis are presented in which the results of anal ileostomy were completely unsatisfactory. A permanent abdominal ileostomy had to be done in 4 and is contemplated in the fifth. Most authorities do not consider this a good operation, although a few state that it can be used satisfactorily for megacolon and polyposis.

Multiple polyposis (familial) is generally managed by ileoproctostomy and fulguration of the polyps in the remaining rectal segment either before, during or after the subtotal colectomy. Because of the high incidence of carcinoma in these polyps, the high rate of complications, and the impossibility of adequate follow-up in many cases, some surgeons prefer permanent ileostomy and coloproctectomy.

CONCLUSIONS

Les quinze dernière années ont montré une nette amélioration des résultats du traitement chirurgical de la colite et un nombre de malades beaucoup plus élevé est adressé au chirurgien pour une intervention plus précoce. L'iléostomie de *Brooke* et l'adaptation du sac à la fin de l'opération ont presque complètement éliminé les complications de cette intervention. La grande majorité des malades sont tout à fait rétablis et aptes à mener une vie familiale, professionnelle et sociale à peu près normale.

Voici les indications opératoires les plus importantes avec les thérapeutiques plus généralement utilisées.

1. La colite toxique aiguë foudroyante, ainsi que celle associée à une perforation effective ou imminente avec péritonite, est bien entendu un cas d'urgence médicale; il faut intervenir chirurgicalement sans retard lorsque le traitement conservateur reste négatif pendant une semaine. L'auteur pratique en général une iléostomie et une colectomie subtotale en vue d'une résection maximum des tissus atteints. La résection abdominopérinéale est différée. Un nombre restreint d'autorités en la matiere pratiquent une iléostomie seule; d'autres font une coloproctectomie totale avec iléostomie permanente.

2. L'hémorragie massive incontrôlable nécessite une iléostomie et une colectomie subtotale sauf quand il peut être établi que l'hémorragie a son point de départ dans le rectum, auquel cas une iléostomie et une proctectomie sont indiquées.

3. La colite chronique irréversible rebelle au traitement médical et s'accompagnant d'une invalidité, appelle dans la plupart des cas une iléostomie et une col proctectomie permanentes. Cependant il ressort d'un certain nombre de rapports qu'il est de rares cas dans lesquels le colon n'est impliqué dans le processus pathologique qu'à un degré minime: une iléoproctostomie peut donner de bons résultats dans ces cas. Il faudra encore beaucoup de temps et d'expérience afin de déterminer la possibilité d'étendre l'application de cette méthode.

4. La fistule rectovaginale *per se* ne devrait pas être opérée en présence d'une colite ulcéreuse. Cet état nécessite en général une iléostomie et coloproctectomie.

tomy. In some cases it may be possible to ream out the mucosa and submucosa of the rectum so as to permit an ileoanal anastomosis. "I have not been too happy with this operation," he has said, "both from the standpoint of the lack of control and the technical difficulties."

Mayo[9] fulgurates the polyps of the rectum prior to colectomy and end-to-end ileoproctostomy. Proctoscopic examinations are repeated every six months, with fulguration of any polyps that make their appearance. Abdominoperineal resection is done if carcinoma is present.

Ochsner[10] stated that he does a "colectomy and anastomosis of the ileum to the rectum in intelligent patients who will return every three months for proctoscopy. In those who will not return, colectomy and abdominoperineal."

Ravitch[11] performs one-stage pancolectomy and anal ileostomy.

Ripstein[12] does total colectomy with ileoanal anastomosis or permanent abdominal ileostomy.

Thompson and Cave[13] prefer total colectomy with ileoproctostomy or ileosigmoidostomy. Sigmoidoscopic study is done at regular six-month intervals with fulguration of any recurrent or persistent lesions.

Because in most cases myriads of polyps are present, it is my practice to do ileostomy and coloproctectomy.

It is generally agreed that familial polyposis may be handled surgically by (1) permanent ileostomy and total coloproctectomy or (2) subtotal colectomy and ileoproctostomy in the absence of carcinoma of the rectum, with fulguration of the polyps in the retained rectal segment. Most authors prefer the latter procedure, although a few advocate coloproctectomy with ileoanal anastomosis.

Close observation must be maintained throughout life, so that any polyps that persist or develop in the future may be destroyed promptly. This may prevent carcinoma from developing in the remaining segment. Hub
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5. Perianale und perirektale Fisteln sollten bei Bestehen einer geschwürigen Dickdarmentzündung nicht reseziert werden. Wenn sich eine Remission der Dickdarmentzündung nicht erzielen lässt, sollte die Entfernung der Fisteln in die endgültige Resektion des Dickdarms und Mastdarms eingeschlossen werden.

Was die Anastomosierung des Ileums mit dem After betrifft, so wird über drei Fälle von geschwüriger Dickdarmentzündung und zwei von familiär auftretender Polypose berichtet, bei denen die Ergebnisse dieser Operation völlig unbefriedigend waren. In vier Fällen musste eine abdominelle Dauerileostomie angelegt werden, und im fünften Falle wird dieser Eingriff in Erwägung gezogen. Die meisten Autoritäten halten diese Operation nicht für gut, wenn auch einige behaupten, dass sie sich bei Megakolon und bei Polypose mit befriedigendem Erfolg anwenden lässt.

Die (familiär auftretende) Polypose wird im allgemeinen mit Ileoproctostomie und mit Fulguration der im Mastdarm zurückbleibenden Polypen vor, während oder nach subtotaler Dickdarmresektion behandelt. Wegen der Häufigkeit von Krebs bei diesen Polypen und von Komplikationen und wegen der Unmöglichkeit, viele dieser Fälle in angemessener Weise nachzuuntersuchen, bevorzugen manche Chirurgen die bestehenbleibende Ileostomie und Resektion des Dickdarms und Mastdarms.

CONCLUSIONI

I risultati della cura chirurgica della colite sono molto migliorati in questi ultimi 15 anni e un maggior numero di pazienti vengono affidati al chirurgo. La ileostomia di Brooke e l'applicazione della borsa alla fine dell'intervento hanno quasi eliminato le complicanze dell'ileostomia. La maggior parte dei malati viene completamente riabilitata e puo' ritornare ad una vita quasi normale nel seno della famiglia e della societa'.

Le indicazioni principali e le tecniche di solito usate sono le seguenti: 1) La colite acuta fulminante tossica, compresa quella associata a perforazione o con perforazione minacciante e peritonite, e' una condizione che richiede la pronta attenzione del chirurgo se la cura conservativa non ottiene effetti decisivi entro una settimana. L'autore e' solito praticare una ileostomia e una colectomia subtotale asportando quasi tutto il colon malato. La resezione abdominoperineale viene rimandata ad un secondo tempo. Alcuni chirurghi praticano la sola ileostomia, altri fanno una proctocolectomia totale con ileostomia definitiva.

2) La emorragia massiva non controllabile richiede l'ileostomia e la colectomia subtotale tranne quando si sia dimostrato che l'emporragia procede dal retto; in questo caso e' indicata la proctectomia e l'ileostomia.

3) La colite irreversibile cronica con inabilita' del paziente e inefficacia della cura medica indica nella maggior parte dei casi la proctocolectomia e la ileostomia permanente. In molti casi, tuttavia, risulta che il colon e' interessato solo in minima parte, sicche' puo' riuscire utile una ileoproctostomia. E' necessario tempo ed esperienza prima di poter dire se questo metodo potra' usarsi in un certo numero di casi.

4) La fistola rettovaginale, di per se stessa, non deve essere operata in presenza di una colite ulcerosa. Questa di solito richiede l'ileostomia e la proctocolectomia.

5) Le fistole perianali eperirettali, del pari, non devono essere asportate in caso di colite ulcerosa. Se non si riesce ad ottenere una remissione della malattia, le fistole debbono essere incluse nella proctocolectomia.

Per quanto si riferisce alla anastomosi ileoanale, vengono presentati tre casi di

5. Les fistules périanales et périrectales ne devraient pas être excisées lors de colite ulcéreuse. Si l'on ne peut obtenir une rémission de la colite, ces fistules sont à inclure dans la coloproctectomie définitive.

En ce qui concerne l'anastomose iléoanale, trois cas de colite ulcéreuse et deux cas de polypose familiale sont décrits, dans lesquels l'iléostomie anale a abouti à un échec complet. Il a fallu pratiquer une iléostomie abdominale permanente dans quatre cas, et cette intervention est actuellement aussi envisagée pour le cinquième cas. La plupart des autorités en la matière ne considèrent pas cette intervention comme satisfaisante, alors que quelques-uns estiment qu'elle peut donner de bons résultats dans les cas mégacolon et de polypose.

La polypose multiple du type familial est généralement traitée par iléoproctostomie et fulguration des polypes du fragment rectal restant, cela avant, pendant ou après colectomie subtotale. Du fait de l'incidence élevée de carcinomes dans ces polypes, des nombreuses complications et de l'impossibilité où l'on est souvent de suivre ces cas, quelques chirurgiens préfèrent pratiquer une iléostomie et coloproctectomie permanentes.

SCHLUSSFOLGERUNGEN

Die Ergebnisse chirurgischer Behandlung der Dickdarmentzündung haben sich in den letzten fünfzehn Jahren erheblich gebessert, und es werden jetzt sehr viel mehr Kranke zum frühen chirurgischen Eingriff überwiesen. Die Ileostomie nach Brooke und das Anpassen des Beutels bei Beendigung der Operation haben Komplikationen der Ileostomie fast ausgeschaltet. Die grosse Mehrzahl der Kranken werden völlig wiederhergestellt und können zu einem verhältnismässig normalen Leben in der Familie, im Beruf und in der Gesellschaft zurückkehren.

Die wichtigsten Indikationen zum chirurgischen Eingriff und zu den allgemein angewandten Verfahren sind die folgenden:

1. Die akute plötzlich ausbrechende toxische Dickdarmentzündung einschliesslich der Fälle mit erfolgter oder drohender Perforation und Bauchfellentzündung stellt einen medizinischen Notfall dar und erfordert, wenn konservative Behandlung innerhalb einer Woche unwirksam bleibt, sofortige chirurgische Behandlung. Der Verfasser führt im allgemeinen eine Ileostomie und eine subtotale Kolonresektion aus, um den grössten Teil des erkrankten Darmes zu entfernen. Die abdominoperineale Resektion wird aufgeschoben. Einige wenige Autoritäten nehmen nur eine Ileostomie vor, andere entschliessen sich zu einer Totalresektion des Dickdarms und des Mastdarms mit endgültiger Ileostomie.

2. Schwere nicht stillbare Blutungen erfordern Ileostomie und subtotale Dickdarmresektion, ausser wenn der Ursprung der Blutung im Mastdarm nachgewiesen werden kann; in solchem Falle sind Ileostomie und Mastdarmresektion angezeigt.

3. Die chronische irreversible Dickdarmentzündung bei körperlich schwer behinderten Kranken, die auf medizinische Behandlung nicht ansprechen, erfordert in der Mehrzahl der Fälle Ausführung einer bestehenbleibenden Ileostomie und Resektion des Dickdarms und Mastdarms. Es gibt allerdings eine Reihe von Berichten, die auf das Vorkommen seltener Fälle hinweisen, bei denen der Dickdarm nur in geringem Masse geschädigt ist; hier lässt sich eine Ileoproctostomie mit gutem Erfolg ausführen. Es bedarf jedoch noch geraumer Zeit und grösserer Erfahrung um festzustellen, ob sich dieses letztere Verfahren in einer wesentlichen Anzahl von Fällen anwenden lässt.

4. Eine Mastdarmscheidenfistel *an sich* sollte bei Bestehen einer geschwürigen Dickdarmentzündung nicht operiert werden. Dies erfordert gewöhnlich Ileostomie

und Resektion des Dickdarms und Mastdarms.

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Per quanto si riferisce alla anastomosi ileoanale, vengono presentati tre casi di

colite ulcerosa e due di poliposi famigliare in cui i risultati dell'anastomosi ileoanale furono del tutto insoddisfacenti. In 4 di essi si dovette fare un'ileostomia addominale e nel quinto si dovra' farla. Molti chirurghi non considerano buono questo intervento, mentre altri lo ritengono utilenel megacolon e nella poliposi.

La poliposi multipla famigliare di solito viene trattata con la ileoproctostomia e la folgorazione dei polipi nel segme to rettale residuo, sia prima che durante o dopo la colectomia. Tuttavia, data l'elevata frequenza del cancro in questi polipi, le numerose complicazioni e la impossibilita' di seguire attentamente i malati, alcuni chirurghi preferiscono la proctocolectomia e la ileostomia definitiva.

CONCLUSOES

Os resultados do tratamento da colite tem sido melhor nos passados quinze anos porque um numero maior de doentes tem malsido levado á cirurgia.

A ileostomia de Brooke quasi eliminou as complicações. A grande maioria está completamente reabilitada e apta a retornar a uma vida normal.

As indicações mais importantes para a operação e os metodos mais usados são os seguintes:

1. A colite toxica fulminante incluindo as que se associam com perfuração e peritonite são uma emergencia medica e requerem pronta atenção cirurgica se o tratamento conservador não for eficiente dentro de uma semana. O A. costuma praticar uma ileostomia com colectomia subtotal para extirpar a maior parte do intestino enfermo. A resecção abdomino-perineal é postergada.
2. A hemorragia massiça, incontrolavel, requer ileostomia e colectomia subtotal exceto quando a hemorragia pode ser demonstrada com sede no reto, quando então deve ser feita ileostomia e excisão retal.
3. A colite cronica irreversivel com incapacidade do doente, resistente ao tratamento medico indica na maioria dos casos uma ileostomia permanente e retocolectomia. Raros casos são citados em que o colo está ligeiramente comprometido e então uma i eo-retectomia pode dar bons resultados.
4. A fistula reto-vaginal per se não deve ser operada na presença de colite ulcerativa. Usualmente requer ileostomia e colporetectomia.
5. A fistulas perianis e periretais não devem ser operadas quando houver colite ulcerativa. Se não houver remissão elas dever ser incluidas no segmento da colectomia.

Com respeito a anastomose ileoanal o A. apresenta 3 casos de colite ulcerativa e 2 de polipose familiar nos quais uma operação desse tipo foi completamente satisfatorio. Muitas autoridades não consideram essa operação muito boa embora possam recomenda-la para o megacolo e a polipose.

A polipose familiar multipla é geralmente tratada por ileoretectomia e fulguração dos polipos remanescentes, antes durante ou depoisda colectomia subtotal. Pela altamente grave incidencia do carcinoma nesses polipos, elevada taxa de complicações e a impossibilidade de seguimento nesses casos alguns cirurgiões preferem a ileostomia permanente com retocolectomia.

CONCLUSIONES

Los resultados del tratamiento quirúrgico de la colitis han mejorado considerablement en los últimos quince años, y con ello mayor número de enfermos acuden para un tratamiento precoz. La ileostomía a lo Brooke con adaptación de una bolsa al final de la intervención han eliminado casi por completo las complicaciones de la ileostomía. La mayor parte de los enformos se recuperan completamente y quedan aptos para reintegrarse a

una vida normal con la familia, las ocupaciones y la sociedad.

Las indicaciones más importantes de la operación y los procedimientos generalmente empleados son los siguientes:

1. La colitis tóxica fulminante aguda, incluyendo los casos con perforación y peritonitis en una urgencia médica que requiere una intervención quirúrgica rápida si el tratamiento conservados no es efical dentro de la semana. El autor practica una ileostomía plus colectomía subtotal para eliminar lo más posible del intestino enfermo. No practica de momento la resección abdominoperineal. Algunos autores practican únicamente una ileostomía; otros hacen una coloproctectomía con una ileostomía permanente.

2. La hemorragia masiva incontrolable requiere ileostomía y colectomía subtotal excepto cuando puede ser demostrado que la hemorragia procede del recto en cuyo cao se practican ileostomía y proctectomía.

3. La colitis crónica irreversible con grafe afectación del estado general y rebelde al tratamiento médico indica en la mayoría de los casos ileostomía permanente con coloprotectomía. Sin embargo ciertos número de referencias indican que en algunos casos el cólon está sólo afectado mínimamente y entonces puede ser suficiente con la práctica de una ileoproctostomía. Se necesita aún más tiempo y experiencia para determinar si tal proceder puede aplicarse en un número significativo de casos.

4. La fisura recto-vaginal per se no debe ser operada en presencia de una colitis ulcerosa. Corrientemente tal caso requiere ileostomía y coloprotectomia.

El autor presenta 3 casos de colitis ulcuosa y dos de poliposis familiar en los cuales la anastomosis ileoanal fué seguida de fracaso. En cuatro de etos casos ha sido preciso establecer una ileostomía abdominal permanente y habrá que hacerla también en el quinto. Muchos autores no encuentran satisfactoria la anastomosis íleoanal, aunque la reconocen aceptable para casos de megacolon o poliposis.

La poliposis múltiple familiar es tratada generalmente por eleoproctostomía con fulguración de los pólipos en el segmento rectal redundante antes, al tiempo o después de la colectomía subtotal. A causa de la frecuencia del carcinoma en esto pólipos, la abundancia de complicaciones y la imposibilidad de un tratamiento ulterior en muchos casos algunos cirujanos prefieren una ileostomía permanente y una idoprotectomía.

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That humanity has three aspects—science, art, religion; we know, we feel, we believe. But the third, which is perhaps the most important of all, which underlies the others, is least often acknowledged. Many writers speak of the science and art of medicine, but none since Sir Thomas Browne has written of the religion of medicine. The three are necessary to a sane and balanced whole: for just as science and religion without art produce the fanatic, art and religion without science the mystic, so science and art unleavened by faith produce the virtuoso, the technical expert. The faith of medicine is expressed in the Hippocratic oath: "The course I adopt shall be for the benefit of my patients, according to my ability and judgment." The welfare of the patient is the end we seek in surgical decision, which thus becomes the surgeon's religion, a faith that must sometimes repudiate science and transcend diagnosis.

—*Ogilvie*

Editorial

The Development of Otorhinolaryngology and Bronchoesophagology

(Continued from January issue)

FRANCIS L. LEDERER, M.D., F.A.C.S., F.I.C.S., D.A.B.
CHICAGO, ILLINOIS

THE past century of rhinology has concerned itself with function as well as with disease entities which may affect the nose and its accessory sinuses. Since the turn of the seventeenth century (1804), when J. F. L. Deschamps (1740-1824) published the first treatise concerned with this area, much has been added to the knowledge of structure and function of the nose and sinuses. It was not long before the end of the seventeenth century that significant works by Morell Mackenzie and Ingalls, Grünwald, and Bosworth, among others, made their appearance.

While the world awaited the answers to many practical problems in rhinology, the literature was advancing in the direction of preserving and improving function. It appears significant that there were extremes of conservatism and radicalism evident in the management of conditions that affected the nose and sinuses. These undulations were due in essence to lack of understanding of function as well as pathogenesis. In some areas, the unknowns still remain so and will account for the absence of uniformity in treatment, and the challenge of improving and advancing

During the months of 1960 and as long thereafter as possible, the editorial pages of the Journal of the International College of Surgeons will be honored by presentations of rare and extraordinary historic value, the lectures presented at the International Surgeons' Hall of Fame on medical and surgical history from the earliest recorded achievements to those of our own times. We believe that Journal readers who were not able to attend the lectures will find them as exciting as did the audiences present at their delivery. The story of progress in the healing arts and the giants of medicine and surgery to whom we owe the amazing brilliance and scope of modern achievements is intrinsically thrilling and is a vital part of the education of every cultivated man and woman, inside or outside the profession. It is altogether fitting that it should appear in these pages, since the International College of Surgeons is first, last and always a teaching institution.

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*Presented as an address at the International Surgeons' Hall of Fame, Chicago, May 5, 1959.

the present state of knowledge is forever before us. The names of Ross Hall Skillern, Arthur Proetz, Shaffer, van Alyea and many others are identified with the present era.

The existence of paranasal sinuses was known to the earliest practitioners of medicine. This is true especially of the frontal sinus, since wounds of the sinus were common at the time when darts and spears were used as weapons of warfare. The first reference concerning sinus disease is contained in the works of Hippocrates. He stated, "In a person having a painful spot in the head with intense cephalgia, pus, or water running from the nose or by the mouth or at the ears, removes the disease." The origin of the discharge was supposed to be from the brain. The case to which he refers was probably one of inflammation involving one or more of the paranasal sinuses. This cannot be proved, since no anatomic or pathologic description was given of the diseased sites.

After Hippocrates and the Greek center of learning, medical culture shifted to Alexandria, where medical progress is thought to have been associated with a fair degree of skill. The school and library were founded in Alexandria by the Ptolomies in 320 B.C. and progressed and remained the center of learning until 640 A.D., when the final destruction was completed by the wars with the Romans. During this period the study of anatomy became quite advanced, and it is inconceivable that in any dissection of the human body the paranasal sinuses could be overlooked. As a result of the Roman conquest, schools, libraries and practically all records were destroyed. It is difficult, therefore, to judge the progress made by the Egyptian anatomists and surgeons.

The next reference to the sinuses is noted in the writings of Galen (131-201 A.D.). He refers to the sievelike bones in describing the nose and was probably referring to the cribriform plate and the paranasal sinuses when he stated: "It has been stated before in regards to the perforation within the nostrils how wonderfully the bone situated in front of the ventricles of the brain receives them, being similar to a sponge and in regard to the passage of these into the mouth which is in the palate." Galen divided diseases of the nose into two classes, polyps and ozena. He stated, too, that "Sarcoma is an unnatural growth of flesh within the nostrils. Indeed, a polyp is a kind of sarcoma . . . A sarcoma differs from a polyp in size and structure."

From the time of Galen, research into anatomy and medicine declined for several hundred years. During this period Galen's views were considered the last word, and all scientific study was stagnated by the terrors of the Inquisition and by the political and religious thinking of the Middle Ages. With the relaxation of some of the horrors of the Inquisition, however, there was renewed interest in anatomic study.

In the early part of the sixteenth century, Berenger del Carpi, an instructor in surgery at Bologna from 1502 to 1527, described the sphenoid sinus. He thought it was the source of catarrh and denied that the ethmoid plate was pervious to the passage of the cerebral fluids. He thought this latter phenomenon took place through the sphenoid plate. Cloquet, in his writings, expressed the opinion that Berenger also noted the presence of the frontal sinuses. Vesalius, who became professor of anatomy at Padua and also taught at Bologna and Pisa and subsequently became court physician to Charles V of Spain, described the maxillary, frontal and sphenoid sinuses. He stated that these cells contained nothing but air. Fallopius, about 1600, described the sphenoid sinus and noted that it began to develop after the first year, became larger at the time of maturity, and that in the adult it was double. He further noted that the frontal and maxillary sinuses were not present in the newborn. Some early authorities credited Casserius with discovering the maxillary sinus but since he was an anatomist at Padua at about 1600, it is noted that others described this structure many years before him.

Gabriele Fallopio, or Fallopius (1523-1562), described two types of intranasal growths, vascular hypertrophies which where to be found further back in the nose, and polyps which were edematous growths situated in more accessible parts of the nose. For the cure of the anterior growths he used a ligature, leaving it around the growth for two or three days, when it would fall off with the constricted mass. He stated "But when the polypus is well within the nose it is difficult to use the ligature, which should encircle the roots of the polyp. I take a silver tube which is neither too broad nor too narrow, and then a brass or steel wire, sufficiently thick, preferably the iron wire from which harpsichords are made. This double, I place in the tube so that from this wire loop is made one end of the tube, by which, used in the nares, I remove the polyp. When the polyp is engaged in the loop, I push the tube to the root of the polyp and extract it, since by this wire loop the root of the polyp is cut because it is a soft substance." Harder growths he pulled down so that he could cut off the roots with a knife.

During this time it is interesting to note the function which was ascribed to the paranasal sinuses. Early anatomists thought they held air or filtered it before it entered the brain. Placentinus believed them to contain a mucous humor which was distilled into the nares; others, such as Bartholinus, thought they made the voice more resonant. Fallopius, Veslingius and Jesson as early as 1601 thought they generated animal spirits. Spigelius thought they drew in odors. Jesson and Bartholinus believed the frontal sinuses contained a humor which moistened and lubricated the eyes. Paaw in 1763 thought they contained a viscid matter similar to the substance of the brain which draws air in so that it is better assimilated and prepared for the brain. Hermann Boerhaave (1668-1738) was under the impression that the acuteness of smell depended on the size of the frontal sinuses and also that they acted as reservoirs for the nasal secretion. He further remarked that the reason why children's noses were always running was the fact that the sinuses were not sufficiently developed to contain the mucus.

Alexander Read, in 1642, in his "Manual of Anatomy or Dissection of the Body of Man," speaks of the frontal sinus as being double in childhood but one in those of ripe age. These cavities, he stated, contained a clammy substance, kept in a green membrane. He thought they were for the retention of odor before it was carried into the brain. Haller, in 1763, thought the sinuses contained a thick fluid which was taken from the blood for the purpose of lubricating the nasal mucosa. Veslingius, however, in 1642, stated: "There is much doubt as to their use." Nathaniel Highmore (1613-1685) in 1651 gave the first accurate description ("Disquisitio Anatomica") of the maxillary sinus, later named for him as the antrum of Highmore. He presented an illustration of the sinus as he observed it and in addition reported a case of suppuration of the maxillary sinus caused by an abscess of a canine tooth and relieved by pulling the tooth.

In 1660. Conrad Victor Schneider (1614-1680) wrote a treatise "De Catarrhis." This constitutes the first description of the nasal mucosa, the Schneiderian membrane. He proved the fallacy of much of the early thinking concerning the sinuses, insisting upon the impermeability of the base of the skull to liquids and air. He showed that the origin of the nasal discharge could not be from the cranial cavity and that even if formed there it could not get out, since neither the cribriform plate, the nutrient canal of the sphenoid bone, nor the lacerated foramens are pervious, as had been claimed previously. He further noted that no fluid as viscid as mucus was found in the cranial cavity and also that the cranial nerves could not act as a point of entrance. He located the origin of the nasal discharge in the anterior and posterior pituitary membranes, as he termed the nasal and pharyngeal mucosa. He found that mucus could be squeezed out of the membranes of this area even in the dead subject. He stated that the anterior and posterior pituitary membrane, when normal, exudes the mucus moderately; when more is formed, the condition of "catarrh" results.

Little was written concerning the ethmoid cells. Galen referred to the porosity of the cribriform plate, remarking that the nasal bones were similar to a sponge. They were known to Paulus Ageneta. Watson, in his "Diseases of the Nose," published in 1875, was familiar with the ethmoid cells, for in his description of the nasal meatuses he states, "Each fossa communicates with four sinuses, the frontal above, opening with the anterior cells into the middle meatus through the infundibulum; the sphenoidal behind, opening into the superior meatus; the maxillary or antrum Highmorianum, opening indirectly into the middle meatus at the lower part of the infundibulum, and the posterior ethmoidal, opening into the superior meatus."

Watson was also familiar with the presence of two types of epithelium in the nose, the olfactory and the ciliated portion; the presence of numerous glands in the submucosa of the nose, and the variations in these glands in the sinuses. From this it is to be assumed that the anatomy of the ethmoid bone was well worked out before the latter part of the nineteenth century. In 1891 Bosworth published a paper on the various forms of disease of the ethmoid cells, and about the same time Grünwald published another on the affection of the frontal sinus in which ethmoiditis is mentioned.

Following, or coincidental with this period, there were a large number of contributions to the anatomy of the various sinuses. Zuckerkand (1882) is credited for initiating the study of modern sinusology by discussing the anatomy of the sinuses and the nose in a comprehensive manner. Others contributing at this period were Billroth, Woakes, Killian, Chiari, Jeanty, Ferreri, Grünwald, Tilley and Luc of the European school, while in the United States there were Casselberry, Bosworth, Bryan, Knight, Swain, Rice and Ingalls. In 1904 Harris P. Mosher wrote on "The Applied Anatomy of the Frontal Sinus," and in the following year the contributors to the literature were Myles, Leland, Coakley, Casselberry, Roe, Farlow, Gleitsman, and Behrens. Hanau W. Loeb, in 1907, presented the results of his numerous and painstaking experiments on the "Anatomy of the Middle Turbinate with Special Reference to its Topographic and Surgical Relations." J. P. Schaeffer contributed a classical monograph on the "Nose and Olfactory Organ," in which he discussed the embryology, anatomy and anatomical variations of the paranasal sinuses. A. Logan Turner, Ross Hall Skillern, Proetz and VanAlyea brought sinusology up to the present high standard of knowledge.

The development of surgical procedures on the sinuses was invariably linked with the study of the various types of pathology and also upon the ability of the surgeons to make a proper diagnosis. It has only been during the last 300 to 400 years that there is reference to operation upon a diseased sinus. Prior to this time the measures employed were those which dealt with fractures and injuries of violence, especially to the frontal sinuses and the treatment of polyps and tumors of the nasal passages.

Regarding injuries, the following statement appears: "If from a wound in the forehead, blood and air emerges the wound will not be fatal but if no air emerges the wound will probably be fatal." From this we can deduce that the early surgeons were familiar with the different types of fractures of the frontal area of the head, and, even if they did not know of the sinuses as such, they had an idea as to symptomatology and possible prognosis.

Ambroise Paré in 1564 warned the surgeons against trephining the frontal sinuses as they are "filled with a white sticky fluid as well as air." Fabricus Hildanus discussed wounds of the frontal sinus as "not healing easily and often degenerating into fistulae and malignant ulcers." He further stated: "The wounds of these cavities have such a large communication with the eyes that I have seen acrid and corrupted pus which flows from these cavities fall upon the conjunctiva and push the eye out of place." Palfin, at a later date, gave four differential points to distinguish the frontal sinus from the cerebral cavity, in wounds of the head: "When one sees mucus coming out of the wound; when air is blown from the wound by expiratory effort with the nose and mouth closed; the penetration of injected bitter water from the wound into the throat; or it is discharged from the nose."

Nasal diseases, particularly polyps, have been prominently discussed in medical history from the earliest times. Cato the Censor (born in 232 B.C.) had a very poor opinion of doctors—in fact, of learning in general. Amid many recipes, amulets, charms and invocations, we find him prescribing his favorite, almost his only drug for nasal polyps: "If there is a polypus in the nose, rub together some dry wild cabbage leaves in the hand and place it at the nose and draw up the breath as much as you can. In three days the polypus will fall away. Nevertheless, for some days do the same; so that you may render the roots of the polypi entirely healthy." Hippocrates (460-370 B.C.) is credited with developing a technic for removal of polyps: A sponge of sufficient size to fill the nasal cavity having been selected, four strings, each one cubit in length, were attached to it and their free ends were tied together. A long, flexible, metal probe with an eye at one end was passed through the nostril and brought out at the mouth; the united ends of the strings were threaded through the eye of the probe, which was then drawn through the nose. The strings were then seized by the operating surgeon, and by forcible traction the sponge was drawn through the nose, the mass of the polyps coming with it. Regardless of whether the growths were removed by evulsion or by cautery, Hippocrates afterward applied a dressing consisting of honey, to which there was occasionally added some strong caustic; this was kept in contact with the parts by means of small leaden plates inserted into the nostrils. In the case of hard polyps, Hippocrates directed that the nostril should be slit open, in order that the tumor might be thoroughly extirpated, and the roots afterwards destroyed with a hot iron through a hollow tube used as a speculum. In another method for harder growths, perhaps what we identify as fibrous hypertrophies, Hippocrates employed the principle of the snare.

Lorenz Heister (1683-1758), the great German surgeon of the eighteenth century, speaks of polyps springing from the accessory sinuses and the cavities of the ethmoids, as a result of obstruction of one or more glands of the pituitary membrane. Giovanni Battista Morgagni (1682-1771), in 1761, made pertinent observations that, at postmortem, polyps were more frequent outside than inside the sinuses. He also approved of Valsalva's method of removing the lamella of bone on which the polyps grow, with the view of preventing recurrences.

J. F. L. Deschamps (1740-1824) published a "Treatise on the Diseases of the Nasal Fossae and Their Sinuses" in 1804. He divided nasal polyps into: (1) fungous and vascular; (2) mucous and lymphatic; (3) scirrhous, and (4) sarcomatous. His methods of treatment were: (1) the local application of astringents; (2) excision with guarded bistoury; (3) avulsion with forceps; (4) the knotted thread (which he ridicules); (5) chemical caustics and the actual cautery, and (6) ligature with a waxed thread, or with wire of pure silver. He recognized the symptoms of acute frontal sinusitis, described simple inflammation of the maxillary sinus and advocated treating the latter by opening the sinus through the alveolus of a bad tooth, if one were present, or through an opening above the alveolar border large enough to introduce a finger.

Friederich Theodor von Frerichs (1819-1885), in 1843, is said to be the first to refer to the surface of a polyp being similar to that of the surrounding epitheluim. Max Joseph von Chelius (1794-1876) whose "Handbuch der Chirurgie" was the standard textbook in Germany until the middle of the nineteenth century, regarded the nasal polyp as a local infiltration of the mucosa with serum. Sir James Paget (1814-1899) classed polyps as fibrocellular tumors, and his warm friend, Rudolph Virchow (1821-1902), the man credited with being the founder of cellular pathology, described them as myxomas. Theodor Billroth (1829-1894) ascribed the structure usually found in rectal polyps to those found in the nasal cavity and stated that they were nearly all edenomatous in structure. Intimately associated with subsequent contributions to the polyp literature concerned with the pathologic anatomy were such names as those of Hopmann (1883), Emil Zuckerkandl (1861-1921), Woakes (1885), Chiari (1887), J. H. Bryan (1889), Hajek (1896), Cordes (1893), Okada (1898), Gustav Killian (1860-1921), Uffenorde, Kubo and Hirsch (1929).

In 1872 Voltolini drew attention to the intimate connection between asthma and nasal polyps, asserting that the former disappeared when the latter were removed. He ascribed this to the reflex irritation of the mucosa propounded by Johann Müller in 1853.

The earliest reference to sinus suppuration is that given by Fernelius in the early part of the sixteenth century, when he stated "There forms sometimes abscesses around these places without fever or very much pain and after their rupture, I have seen true pus run in abundance from the nostrils, as it comes out of purulent ears and this without any prejudice to the general health." He made no notation of any surgical procedure. Molinette, in 1675, wrote: "In a patient suffering from terrible pain, they made a crucial incision on the jaw, and with the crown of the trephine penetrated into the antrum of Highmore which was the seat of the abscess."

William Cowper (1666-1709), who wrote the section on diseases of the nose in James Drake's "Anthropoligia Nova," published in 1706, gives a description of the alveolar process approach to the antrum in sinus suppuration. It was then known as Cowper's operation. He is also reported as having suggested the perforation of the antrum on its anterior surface.

Some believed that Cowper should not have been credited with originating the alveolar process operation. Morgagni claimed that Jean Henry Meibomius, who died in 1655, suggested it. A. A. L. M. Velpeau (1795-1867), on the other hand, thought that Zwingler before Meibomius pulled out teeth, dilated the alveoli and made an exit for the pus from the antrum.

Lemorier, a surgeon of Montpelier, in

1717 proposed to open the sinus more posteriorly between the malar tuberosity and the third molar tooth. Desault, in 1798, thought the opening should be made through the canine fossa. This method was later applied with more modern principles by E. G. F. Küster (1839-1930) in 1899, and was known as the Desault-Küster technic. Velpeau is reported to have advised perforation of the antrum through the nasal surface and fixing a lead cannula in the opening. Acel, after approaching the sinus by the method of Cowper, inserted a second cannula through a fistulous opening which had formed in the nose.

Jourdain, dentist and graduate in surgery, in 1765 presented to the Royal Academy of Surgery of Paris a method of probing the antrum by its natural opening, and then by suitable injections to restore it to normal. After this presentation, M. Allouel Jr. claimed that the credit for discovery of this procedure rightfully belonged to his father. He said his father had originated it in 1737 and in 1739 had used it with success in treating a patient who had a diseased antrum. It was the decision of the Academy, however, that Jourdain should be credited with the discovery, since Allouel did not publish his idea. The Academy further appointed a commission to test the efficacy of probing and irrigating the maxillary sinus through its natural ostium. They came to the conclusion that probing the natural ostium was impracticable, since the lateral wall of the nose was perforated artificially in more cases than were entered by way of the natural orifice.

Gooch, an English surgeon in the middle of the eighteenth century, and John Hunter (1728-1793), in 1778, suggested that in patients who no longer had molar teeth the antrum should be perforated from the nasal surface. John Hunter was very familiar with several procedures for treating an abscess of the antrum, but was more concerned with the olfactory nerve than with the sinuses.

At this time other surgeons were using one or more of the methods that have been mentioned. They also attempted to keep the openings into the sinuses from closing for several weeks. Callisen, in the eighteenth century, inserted a seton into the opening. Busch and Henkel also used a seton by placing it through a fistula in the floor of the orbit and bringing it out into the mouth by way of the alveolus. Weinhold, around 1810, went by way of the canine fossa into the antrum and then through the palatine vault.

Many of the early surgeons were familiar with tumors of the antrum. On the successful procedures, it is reported that Charles Wiseman (1622-1676), surgeon to King Charles II. cut into a man's cheek, sawed the alveolar area of the maxilla into pieces and took out the entire jaw and thereby cured the patient. At a later date, Dubertrand removed a tumor through the alveolar ridge; so did Acoluthus of Silesia, in 1693, removing part of the alveolar ridge and subsequently a tumor of the maxillary sinus.

It is of note that Paré had reported trephining the frontal sinus for injuries of this area. Morgagni (1761) stated that Littre conceived the idea of using a trephine. The trephine had also been used by Mangetus to remove a worm. The first reference to a more major procedure, however, is that of Runge in 1750, when he advanced the idea of obliterating the entire frontal sinus. This was carried out by trephining the wall and introducing a "bourdonet" rubbed with a mixture of triturated silver nitrate and balsam into the base of the sinus. This method seems to have been forgotten until it was reintroduced by Theodor Kocher (1841-1917), who recommended curettement and obliteration of the cavity by granulation tissue.

Juarasz of Berlin, in 1883, is credited

thesia, blood and blood substitutes and prosthetics) in combating malignant tumors involving more than just an isolated portion of a true vocal cord.

Asclepiades is mentioned by Galen (131-201 A.D.) and Aretaeus (80-160 A.D.) as the first surgeon to perform a tracheotomy. Galen used the phrase "to cut the larynx" and Aretaeus "make an incision in the artery." In ancient Greek writings the words "the artery" and "bronchus" meant the windpipe and included the larynx. Galen also used the words "the artery," "the cough artery" and "bronchus," all meaning the windpipe. Caelius Aurelianus (fifth century) termed the operation the "division of the artery" or laryngotomy. Paul of Aegina (625-690), a great Greek physician, wrote a chapter on "laryngotomy" and quoted from Antyllus (second century A.D.) that the arteria aspera should be divided at about the third or fourth ring. Antyllus called the operation pharyngotomy.

The words "cough artery" were employed by writers after the beginning of the Christian era as a designation of the windpipe below the larynx. After many centuries the word "artery" slowly lost popularity and the structure was referred to as the trachea—a term employed by Fabricius of Aquapedente (1537-1619), Julius Casserius (1545-1605) and Lorenz Heister (1683-1785). It was not until the nineteenth century that "trachea" alone was used.

Rhazes (ninth and tenth centuries) refers to it as "incising the canalis pulmonis between two rings." Albacusis (1013-1106) called the operation "sectio epiglotis"; Avicenna (tenth and eleventh centuries) "scisio cannal" and Avenzaar (1126-1198) "incisio cannal pulmonis."

Pierre d'Abano called the operation "Sub cannatio incisio asperae arteriae"; Fabricius of Aquapedente called it "perforation of the aspera arteria"; Julius Casserius used only the term "laryngotomy." Nicolas Habicot in 1620 first described the operation under the term "bronchotomy." He suggested that the procedure be called "larynbronchotomie."

The word "tracheotomy" first appeared in the "Libri Chirurgiae XII" of Thomas Feyens or Fienus (1567-1631), Professor of Medicine at Louvaine. Tractatus IV of the book is headed "De Tracheotomia." Sanctorius of Justinopolis advised the use, in 1625, of a trocar and cannula to open the trachea in children with a disease that was possibly diphtheria. The designation "tracheotomy" did not become popular, and writers continued to use the terms "laryngotomy" and "bronchotomy" indiscriminately for nearly another century.

In 1718 Lorenz Heister reintroduced the word "tracheotomy" in his *Chirurgie* and recommended that the other names be discarded. It was Desault (1744-1795) who distinguished between laryngotomy and tracheotomy.

According to E. Fletcher Ingals, Professor of Diseases of the Chest, Throat and Nose, at Rush Medical College late in the nineteeth century, the credit for having discovered the art of laryngoscopy is usually given to Johann Neopomuk Czermak of Pesth (Budapest, Hungary), but apparently many investigators before his time had experimented more or less successfully in illuminating the larynx. Phillip Bozzini of Weimar, in 1807, published a description of an instrument for examining the throat. It consisted of a curved speculum divided by a partition and fitted with two mirrors at its angle. One mirror was intended to convey the light, the other to receive the image. This arrangement is unnecessary, for one mirror can serve both for reflecting light and for receiving the image. A wax candle with a reflector supplied the illumination, but it is not likely that Bozzini ever saw any parts of the larynx with his speculum.

L. Senn of Geneva, in 1827, published an account of an attempt to view the upper part of the larynx with a mirror, suggesting its use in the diagnosis of laryngeal tuberculosis. Bennatti (1832) and Avery of London (1844) attempted to illuminate the larynx by means of artificial light conducted through tubes; but, as has been shown by Armand Trousseau and J. H. Bellocq, who wrote an outstanding treatise on laryngeal tuberculosis in 1837, these instruments crowded the tongue and epiglottis before them so as nearly to close the orifice of the larynx. At most, they could expose only a small portion of its posterior wall.

About one hundred years previous to these efforts, Levret of Paris, an eighteenth century surgeon, probably the first experimenter in this direction, attempted to see the larynx by means of a polished steel plate used as a tongue depressor. On March 18, 1829, before the Hunterian Society of London, Benjamin Guy Babington (1794-1865) described a laryngeal mirror similar to those used today. On this he concentrated the sun's rays by means of a hand mirror. He called the instrument a "glottiscope" and apparently used it on many patients. There is no evidence, however, that Babington ever saw the movements of the vocal cords, for he recorded no cases, and he had no pupils or followers.

Another unsuccessful effort to view the larynx was made by Robert Liston of London. In 1840 he suggested that a view of the laryngeal parts may be obtained by means of "a glass as is used by dentists on a long stalk previously dipped in hot water, introduced with its reflecting surface downwards and carried well into the fauces." It is doubtful that he ever carried out such an examination, since he emphasized careful palpation with the fingers to establish the existence of a swelling.

In 1844, Adam Warden of Edinburgh had the idea of employing a prism of glass for obtaining a view of the lar using a powerful Argand lamp with l prisms attached for illumination. He so unsuccessful that he was forced to conclusion that his method would giv assistance in the investigation of dis below the pharynx. In the same y John Avery of Charing Cross Hosp London, was attempting to visualize vocal cords with the aid of a speculum reflector. He employed a large circ reflector (like Czermak after him), to increase the luminous power of a ca held at a short distance from the patie mouth. The reflector was attached frontal pad and mounted on the ope ing surgeon's head. The speculum similar to that used by Bozzini. laryngeal mirror instead of being fixe a slender shank, was placed at the en a speculum. It was very difficult, if almost impossible, to introduce Ave speculum without irritating the bas the tongue and causing retching. and the cumbersome reflecting appar are responsible for the failure of Ave laryngoscopic method.

Until the invention of the indirect (ror) laryngoscope, the larynx, as we other internal structures situated ben the level of the oropharynx, remained den from view and could be exam only at the necropsy table. Conseque the majority of laryngeal lesions rema undiagnosed and inadequately treate treated at all. Laryngology, as it exi came under the realm of the physicia view of its inaccessibility to surg practicing in the prelaryngoscopic er

In spite of the inability to visualize larynx, a number of operative proced undertaken for the removal of tumor this structure were reported. Prio 1840, Sir Astley Cooper (1768-1841), most popular and successful surgeo the Georgian era, is said to have rem with his finger a large carcinomatous tumor, about the size of a hen's egg, from the under surface of the epiglottis. Up to the year 1850, 31 cases of laryngeal tumors were reported in the literature. Horace Green (1862-1866), the pioneer American throat specialist, was one of the few to remove a laryngeal tumor before the invention of the laryngeal mirror. When the patient opened his mouth widely and coughed, a round, white, fibrous looking tumor, about the size of a cherry, could be seen arising from the larynx. Green seized it with a tonsil forceps and divided it with a knife. Before his time it was considered impossible to introduce any instrument into the larynx, and when Green said that in 1838 he had applied a silver nitrate solution within the larynx with a curved applicator, his statement was received with incredulity. His claim was condemned as an anatomic impossibility and an unwarranted innovation in medical practice. He was attacked by his contemporaries, forced to resign from the medical society to which he belonged and threatened with expulsion from the Academy of Medicine. He did, however, live long enough to see his claims for intralaryngeal medication justified.

The first to demonstrate the larynx in the living subject was Signor Manuel Garcia, a teacher of vocal music in London. He became quite expert in autolaryngoscopy and also succeeded in demonstrating the larynx in others. How his wish to view the larynx became realized during a vacation in Paris is expressed in his own words:

"One September day, in 1854, I was strolling in the Palais Royal, preoccupied with the ever-recurring wish so often repressed as unrealizable, when suddenly I saw the two mirrors of the laryngoscope in their respective positions, as if actually present before my eyes. I went straight to Charriere, the surgical-instrument maker, and asking if he happened to possess a small mirror with a long handle, was informed that he had a little dentist's mirror, which had been one of the failures of the London Exhibition of 1851. I bought it for six francs. Having obtained also a hand mirror, I returned home at once, very impatient to begin my experiments. I placed against the uvula the little mirror (which I had heated in warm water and carefully dried); then, flashing upon its surface with the hand mirror a ray of sunlight, I saw at once, to my great joy, the glottis wide open before me, and so fully exposed, that I could perceive a portion of the trachea. When my excitement had somewhat subsided, I began to examine what was passing before my eyes. The manner in which the glottis silently opened and shut and moved in the act of phonation filled me with wonder."

His observations, entitled "Physiological Observations on the Human Voice," were first communicated to the Royal Society of London in 1855, laying emphasis on what he could see and not on the instrument. It attracted little attention at first, for the art was thought to be of no practical value in the diagnosis of disease, because a thorough inspection was supposed to depend upon a peculiar education of the muscles that would enable the patient to control the position and movements of the throat. Garcia's writings, however, induced Ludwig Türck, a well-known Viennese neurologist, to experiment with similar mirrors, apparently unaware of Garcia's work, in the summer of 1857, but he gave up with the coming of autumn because of the difficulty of obtaining sunlight. His experiments were not lost, for Czermak, a physiologist, who had been visiting Vienna during the summer, borrowed the mirrors and continued the investigations. He overcame the difficulties that had formerly prevented a clear view of the larynx, by employing the reflector, a mirror held in his teeth, by causing the patient to protrude the tongue instead of depressing it, and by substituting artificial light for sunlight. In March 1858 Czermak read an important paper on laryngoscopy before the Academy of Sciences of Vienna, and insisted on giving credit to Garcia for the invention of the laryngoscope. In 1859, Czermak also turned his mirror upward and, with the aid of a palate retractor, was able to demonstrate the nasopharyngeal cavity. The method was further developed and simplified by Friedrich Voltolini in 1861. Both Czermak and Türck published papers on the use of the laryngoscope and gave rival public demonstrations in its art. Ill feeling between Türck and Czermak increased so greatly that the former threatened legal action in the High Court of Vienna. Each made claim to the Monthyon Prize of the French Academy of Science of the Imperial Institute of France in 1860. A special commission appointed to study their claims decided "with Solomon-like wisdom: to divide the 2400 franc prize between them."

It appears that while Manuel Garcia was the first successful laryngoscopist, Ludwig Türck was the first to apply the laryngoscope to medicine and Johann Czermak the man who developed the instrument and popularized it with the medical profession. Garcia was acclaimed as the true "Father of Laryngology." In recognition of his discovery, which, incidentally, created a new medical specialty, Garcia, when he reached the age of 100 (he died at 102), was honored with a celebration organized by Sir Felix Semon, the like of which has yet to be equaled. On March 17, 1905, the King of England awarded him the insignia of the honorary Commandership of the Royal Victorian order. King Alphonso XIII of Spain, through the Spanish charge d'Affaires in London, invested Garcia with the Royal Order of Alfonso XII. By the German Emperor he was awarded the Great Gold Medal for Science, which is a rarely awarded distinction. Addresses and messages of praise were sent from laryngological societies, and delegates came from universities, medical colleges, colleges of music and scientific bodies all over the world. He was presented with a portrait of himself painted by John Singer Sargent, for which subscriptions were received from laryngologists. Garcia never meant to become a founder of a new specialty and protested that the mirror only cost him six francs!

One thing is certain about Ludwig Türck, namely, that his Atlas, *Klinik der Kehlkopfkrankheiten*, published in 1866, is remarkable for its twenty-four chromolithographic plates showing a wide variety of laryngoscopic views and postmortem specimens. This heralded an era when guesswork was removed from alterations in voice. The disease entities were recognized but not necessarily cured. Syphilis had to await its salvarsan and penicillin, tuberculosis required dihydrostreptomycin, and tumors had to await refinements of direct laryngoscopy and external surgical treatment of the larynx.

Prior to the bronchoscopic era, foreign bodies in the air passages were treated by the administration of emetics and sternutatories to promote their expulsion. Frequently, the patient was inverted or hung up by the feet, and his chest or back struck with the hand. The first extensive coverage of this subject was by Louis, *Memoir on Bronchotomy*, before the Royal Academy of Surgeons at Paris in 1759. In 1819 there was a paper in the *Transactions of the Medical Society of the State of New York*—a report of the removal of a bean from the bronchus by bronchotomy (tracheotomy). Samuel D. Gross, a general surgeon, in his monumental *A Practical Treatise on Foreign Bodies in the Air Passages*, written in 1854, recognized the danger of laryngospasm if these methods were resorted to without previously performing a tracheotomy. He advised early "bronchotomy" to guard against such a complication and to provide an orifice through which instruments (long hooks and tenaculae) might be passed for attempted extraction of foreign bodies. If the foreign body could not be retrieved, to prevent its harmful effects, expectorants and purgatives were administered, and bleeding, counterirritation and the application of leeches were resorted to. Needless to say, the mortality rate from this approach was very high, varying from 30 to 50 per cent.

One of the first to whom occurred the idea of examining the various cavities of the body by endoscopic means was Bozzini of Frankfort, who in 1806 devised a primitive endoscope for direct examination of the urinary bladder or the rectum. His laryngoscope has already been mentioned. This was one of the tubes he unsuccessfully endeavored to use in conjunction with his light conductor, consisting of a convex, vase-shaped stand, the "lamp holder," which was made of tin covered with leather, except in its upper third, which was of uncovered brass. With a candle inside, one-half of the lamp holder provided the light, the other half having an opening in the posterior wall for observation. Bivalved tubes of various lengths and diameters were attached to the opening in front of the lamp holder. The rays of light from the candle were reflected into the examining tube. This instrument was condemned by the Medical Faculty of Vienna and looked upon as an impractical toy.

John D. Fisher of Boston, in 1824, devised a similar apparatus consisting of three cylindric tubes united at right angles and containing lenses for magnification. The illumination was by candlelight. In 1826, Segales of Paris improved Bozzini's apparatus by constructing a urethrocystic speculum. He suggested it could be used for examining other orifices by altering its dimensions. John Avery (1848) also devised a primitive endoscope.

The pioneer of practical endoscopy was A. J. Desormeaux of Paris, who in 1853 introduced an apparatus lighted by a gasogen lamp and identical in principle to that of Fisher, but intended as a urethroscope. He worked for more than thirteen years accumulating facts to demonstrate the value of this method of investigation and treatment of diseases of the bladder, rectum, uterus, auditory meatus, pharynx and larynx. He has, however, been called "The Father of Endoscopy." Richard Cruise, of Dublin, in 1865 modified Desormeaux's endoscope by improving the illumination. He pointed out that it could be of service in examining any portion of the body into which a straight tube could be inserted. He was the first to mention the possibility of direct examination of the air and food passages. He used an oil lamp.

Kussmaul of Frieburg, in 1868, using the elongated urethroscope of Desormeaux, was the first to perform direct esophagoscopy, by using as his subject a sword-swallower, sitting in the sword-swallowing position. Kussmaul demonstrated a carcinoma of the thoracic esophagus. His pupil Muller showed that a rigid tube 13 mm. in diameter could be introduced safely into a normal esophagus. Later, also in 1868, Waldenburg of Berlin and Stoerck of Vienna, employed an 8 cm. gum-elastic tube which could be introduced into the esophagus, the illumination being obtained by use of the laryngeal mirror. Other tubes were developed by Toruve, Voltolini, O'Dwyer and Rosenheim.

Morell Mackenzie, in 1880, designed a collapsible skeleton-like esophageal tube that could be introduced into the cervical portion of the esophagus, flattened, and expanded when in place. Illumination was indirect, the mirror being attached to the upper portion of the tube.

Von Mikulicz of Vienna, in 1881, designed a practical esophagoscope, a straight, rigid tube with a slanting distal end, illuminated by means of an interior platinum wire. His anatomic, physiologic and pathologic investigations of the esophagus formed the basis of knowledge of esophagoscopy. He is the acknowledged founder of esophagoscopic technology, the "Father of Esophagoscopy."

Von Hacker, in 1889, improved Von Mikulicz's esophagoscope and designed *special endoscopic instruments, bringing* the method of esophagoscopy to greater perfection. Gottstein of Breslau, in 1891, was the first to design and use esophagoscopes with an additional tube inserted in their walls for the purpose of suction. He also was the first to use topical cocaine analgesia instead of general anesthesia.

Up to this time, laryngologists could view the larynx only by indirect means. Joseph P. O'Dwyer (1841-1898) of New York, in 1880, devised an intubation tube to be used in the treatment of diphtheria and for the expulsion of foreign bodies in air passages. This tube, and the invention of electric light in 1878 by Edison, laid the foundation for direct examination of the larynx and tracheobronchial tree.

On April 23, 1895, Kirstein of Berlin for the first time viewed the interior of the larynx by direct examination, using a flat spatula and a prismatic incandescent lamp, with the patient's head extended and the tongue depressed. He, von Hacker and Mikulicz reported the first direct examinations of the trachea through rigid tubes. Gustav Killian (1860-1921) of Freiburg, frequently referred to as the "Father of Bronchoscopy," was impressed by the work of Kirstein and began to devote his entire time to endoscopy. He demonstrated that the rigid tubes with proximal lighting could be passed into the bronchi and in 1897 removed a bone from the right bronchus, the first time such a feat had been accomplished. In 1912 he was the first to present suspension laryngoscopy.

In America, the first article to be published on esophagoscopy was written by Einhorn of New York in 1897, and in 1902 Einhorn designed the first tube with distal illumination. The conducting wire was carried to the light by means of an auxiliary tube in the wall of the main tube. He was followed by E. Fletcher Ingals of Chicago, who in 1904 devised a separate light carrier in a Killian tube, and fashioned a spatula for direct laryngoscopy. Ingals also introduced respiratory apertures for the bronchoscope.

The name of Chevalier Jackson (1865-1958) is synonymous with present-day endoscopy. After his graduation from Jefferson Medical College in 1886, Jackson visited Morell Mackenzie's clinic in London and observed him using his skeleton esophageal tube. In 1904 Jackson improved the distal lighting principle, designed a light carrier and attached a useful right-angled handle to the endoscopic tube. He was the author of the first book devoted to the subject — *Tracheo-bronchoscopy, Esophagoscopy, and Gastroscopy*, published in 1907.

After Killian developed suspension laryngoscopy in 1912, and a self-retaining laryngoscope, he was followed by his assistants von Eichen and Bruning, Albrecht, Steiner, Seiffert, and Haslinger, and in the United States by Lynch and LeJeune, Roberts, Andrews, Douglas and Lewy. Bruning at Jena advanced in the armamentarium and teaching of proximal lighting endoscopy.

Numerous modifications of earlier instruments have become obsolete, but certain of them, such as the built-in side tube for aspiration or the lens-capped endoscopic lamps, are of established value. The experience of the past twenty-five years has produced many accessory instruments for use in endoscopy, and the modern endoscopist can remove a specimen for biopsy or aspirate a bronchial secretion with an instrument so adapted in shape and material that minimal trauma is caused to the tissues. Modern roentgenographic methods, including tomography and biplane fluoroscopy, are essential in locating aspirated foreign bodies, as well as the use of radiopaque mediums (bronchography was introduced in 1918) in demonstrating bronchial disease.

Therapeutic endoscopy was introduced by Novotny of Poland in 1907, with the application of epinephrine by means of a bronchoscope to provide relief in cases of asthma. This has been extended to include the aspiration of purulent material in cases of bronchiectasis or pulmonary abscess, the treatment of atelectasis, the local treatment of strictures and benign tumors, etc. The use of radium by means of an esophagoscope in treatment of carcinoma of the esophagus has had some encouraging palliative results since it was introduced by Guisez of France in 1908.

Endoscopy has outgrown its limited sphere of usefulness in removal of foreign bodies from the air and food passages. The etiologic, pathologic, symptomatologic, diagnostic, prophylactic and therapeutic data on the tracheobronchial tree and esophagus have become the main indications for the procedure. The diagnostic value of peroral endoscopic study has come to be realized by the medical profession at large.

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Laënnec had little of that air of infallibility, that charm of a magnetic personality, that pervasive atmosphere of prosperity, or those Apollo-like physical characteristics that often go so far in the making of a successful and sought-after consultant. He was sallow, with sunken eyes, small in figure, and excessively thin. In manner he was rather cold and distant. Still, the patients appreciated his ability more and more, and in 1812 he found that his income from his practice amounted to 10,000 francs, a substantial increase from the 400 francs of seven years before.

—*Major*

New Books

BOOKS RECEIVED

The following books have been received by the Editor; they will be reviewed critically as space and facilities permit. Omission of more extended review, however is not to be taken as criticism of the merit of the book.

Clinical Neurosurgery: Proceedings of the Congress of Neurological Surgeons. Edited by Robert G. Fisher, Lee Christopherson, Robert Green and William Mosberg. Baltimore: The Williams and Wilkins Company, 1959. Pp. 269, with 125 illustrations and 22 tables. *Reviewed in this issue.*

Textbook of Surgery. Edited by Guy Blackburn and Rex Lawrie, with a foreword by Sir Russell Brock. Springfield, Illinois: Charles C Thomas, Publisher, 1958. Pp. 1122. Illustrated.

Spinal Cord Compression. By I. M. Tarlov. Springfield, Ill.: Charles C Thomas, Publisher, 1957. Pp. 147, with 41 illustrations.

Le Diagnostic du Cancer d'Estomac a la Periode Utile (Diagnosis of Carcinoma of the Stomach at the Time Most Favorable for Treatment). By Rene A. Gutmann. Paris: G. Doin et Cie, 1956. Pp. 257.

Operative Surgery. Edited by Charles Rob and Rodney Smith. London: Butterworth & Co., Ltd.; Philadelphia, F. A. Davis Co., 1956. Vols. 1 and 2 of 8 (plus index). Profusely illustrated.

Functional Bracing of the Upper Extremities. By Miles H. Anderson. Springfield, Ill.: Charles C Thomas, Publisher, 1958. Pp. 463. Illustrated.

The Clinical Management of Varicose Veins. By David Woolfolk Barrow. New York: Paul B. Hoeber, 1957. Pp. 167, with 70 illustrations.

Pathology and Surgery of the Veins of the Lower Limbs. By Harold Dodd and Frank Cockett. Baltimore: The Williams & Wilkins Company, 1957. Pp. 462, illustrated.

The Surgeon and the Child. By Willis J. Potts. Philadelphia: The W. B. Saunders Company, 1959. Pp. 225. *Reviewed in this issue.*

Symposium on Glaucoma. Edited by William B. Clark. St. Louis: The C. V. Mosby Company, 1959. Pp. 314, with 99 illustrations. *Reviewed in this issue.*

Tumors and Tumorous Conditions of the Bones and Joints. By Henry L. Jaffe. Philadelphia: Lea & Febiger, 1958. Pp. 629, with 701 illustrations.

Pain: The Destroyer and the Sympathetic Origin of Dystrophy. By Miguel Lopez Esnaurrizar. Paris: Editions Lamarie, 1959. Pp. 210, with 18 illustrations.

The Triumph of Surgery. By Jürgen Thorwald. Translated from the German by Richard and Clara Winston. New York: Pantheon Books, Inc., *1959. Pp. 454, with 13 illustrations.*

The Surgeon and the Child. By Willis J. Potts, Philadelphia: The W. B. Saunders Company, 1959. Pp. 255.

In his own inimitable style Dr. Potts has written an interesting and informative book. He may and does speak authoritatively concerning pediatric surgery, for he has had a tremendous amount of experience as surgeon-in-chief of the Children's Memorial Hospital of Chicago. The humanitarianism of the author shines forth from each chapter, whether he is discussing a surgical technic devised by himself or expounding the importance of diagnosis. The field of pediatric surgery has grown rapidly in the past two decades and is demanding especially trained personnel and special facilities. There is no branch of the profession that is as spiritually rewarding as is pediatrics, and in no branch is the impact of the surgeon as great as it is on these tiny patients. It is a "rapidly changing specialty. Better methods of diagnosis and improved technics of surgery will soon make obsolete much that has been . . . written" in this book. The ultimate objective of pediatric surgery will remain the same: "to give the deformed or surgically ill infant and child the best care available." The book can be recommended enthusiastically to anyone interested in pediatric surgery.

—PHILIP THOREK, M.D.

Clinical Neurosurgery: Proceedings of the Congress of Neurological Surgeons, San Francisco, 1958. Edited by Robert G. Fisher, with the collaboration of Lee Christoferson, Robert Green and William Mosberg, Associate Editors. Baltimore: The Williams and Wilkins Company, 1959. Pp. 269, with 125 illustrations and 22 tables.

The sixth volume of *Clinical Neurosurgery* contains the edited proceedings of the Eighth Annual Meeting of the Congress of Neurological Surgeons, held in San Francisco on October 30 and 31 and November 1, 1958. The volume is principally devoted to surgical procedures involving the brain stem, but there are chapters entitled "The Dawn of Neurosurgery" and "Post-Traumatic Epilepsy" (A. Earl Walker) and "The Biomedical Medical Aspects of Space Flight" (A. W. Hetherington). A total of fifteen authors contributed the fifteen chapters, but the guest of honor at the meeting, Dr. A. Earl Walker, is the author of the first three chapters, which include the two aforementioned and another on surgical treatment of the mesencephalic brain stem.

As is inevitable in a book of this type, the subjects covered are somewhat heterogeneous, but all represent worth-while contributions to the neurosurgical literature. Especially noteworthy are the chapters by Walker already mentioned and those by Ward and Wycis and Spiegel on stereotaxic procedures on the brain stem. Hamby has contributed an excellent discussion of the practical technical aspects of operation on the posterior fossal. The final chapter by Hetherington on the biomedical aspects of space flight will be of great interest to all those concerned with that subject.

The editors have again prepared a book that is important to the neurosurgeon, the clinical neurologist and the neurophysiologist.

HAROLD C. VORIS, M.D.

Symposium on Glaucoma: Edited by William B. Clark. St. Louis: The C. V. Mosby Company, 1959. Pp. 314, with 99 illustrations.

This symposium on glaucoma is written by outstanding teaching and practicing ophthalmologists. The histologic, pathologic, surgical-anatomic, biochemical, diagnostic and therapeutic aspects are presented clearly. Recent advances in the medical and surgical management of glaucoma are described. The round table discussion that concludes the volume permits the participants to express their views and theories on the important problems of glaucoma.

This book should be in the library of every ophthalmologist.

—JOHN BELLOWS, M.D.

IMPORTANT ANNOUNCEMENT

Contributors of scientific articles for publication in The Journal of the International College of Surgeons from Europe, the Near East and the Middle East should send their articles to:

European Office of the
International College of Surgeons
6-8 Rue de la Confederation
Geneva, Switzerland

A special committee has been appointed to evaluate the papers submitted for publication. The Journal publishes summaries in English, French, German, Spanish, Italian and Portuguese. Summaries of articles should be included in as many of these languages as possible.

AVIS IMPORTANT

Les auteurs d'articles scientifiques destinés à être publiés dans le Journal du Collège international de chirurgiens sont priés d'adresser leurs articles à l'adresse suivante pour l'Europe, le Proche et le Moyen Orient.

Bureau Européen du
Collège international de chirurgiens
6-8 rue de la Confédération
Genéve (Suisse)

Un comité a été nommé pour l'examen des articles à paraître. Les auteurs sont priés de joindre à leur travail de brefs résumés en français, anglais, allemand, espagnol, italien et portugais si possible.

The following pages comprise

Section II

the BULLETIN

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The Journal of the International College of Surgeons

Vol. 33, No. 2 SECTION II February, 1960

BULLETIN

Embodying Activities of the World Federation of General Surgeons and Surgical Specialists, Section News and Comments

Editor-in-Chief—MAX THOREK, M.D.
Associate Editor—PHILIP THOREK, M.D.
Consulting Editor—MORRIS FISHBEIN, M.D.
Assistant Editors—DOROTHY LANGLEY AND HELEN WEISS

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Schedule of Meetings

1960

Twelfth Biennial
International Congress

INTERNATIONAL COLLEGE OF SURGEONS

Under the Auspices of
His Excellency

the President of the Republic of Italy

CONGRESS PRESIDENT
PROF. DR. PIETRO VALDONI

May 15-18

PLACE OF MEETINGS
Palazzo dei Ricevimenti e dei Congressi
(Palace of Receptions and Congresses)

Rome, Italy

SCIENTIFIC PAPERS

Surgeons living in the United States or South America who wish to present papers, please write:

International College of Surgeons
1516 Lake Shore Drive
Chicago 10, Illinois

Those living in Canada, write:

Dr. Lyon H. Appleby
1666 Broadway W.
Vancouver, B. C.

Dr. E. N. C. McAmmond
925 W. Georgia Street
Vancouver, B. C.

Those residing in Europe, Asia or Africa address:

Prof. Dr. Giuseppe Bendandi
Clinica Chirurgica • Policlinico Umberto 1° • Rome, Italy

Schedule of Meetings

INTERNATIONAL COLLEGE OF SURGEONS

1960

May 12-13 Paris, France	French Section International College of Surgeons
May 15-18 Rome, Italy	Twelfth Biennial International Congress International College of Surgeons
May 21-23 Tel-Aviv and Jerusalem Israel	Post-Congress International Conference of Surgeons Israel Section International College of Surgeons
May 25-26 Tuscaloosa, Alabama	Alabama Surgical Section U. S. Section, International College of Surgeons
September 28 Winnipeg, Canada	Canadian and United States Sections International College of Surgeons
October Quito, Ecuador	Ecuadorian Section International College of Surgeons

Roads to Rome Tours

Combine

Attendance at the Congress With

One of Five

International College of Surgeons European Tours

I: A 21-day tour—New York, Rome and the Congress, Munich, Lucerne, Paris, Amsterdam, London and return to New York.

II: A 35-day tour—New York, Paris, Nice, Rome and the Congress, Naples, Sorrento, Capri, Florence, Venice, Lucerne, Heidelberg, Rhine cruise, Amsterdam, London and return to New York.

III: A 37-day tour—New York, Lisbon, Madrid, French Riviera, Rome and the Congress, Florence, Venice, Innsbruck, Salzburg, Munich, Heidelberg, Frankfurt, Rhine cruise, Paris, London and return to New York.

IV: A 40-day tour: New York, Rome and the Congress, Vienna, Moscow, Leningrad, Helsinki, Stockholm, Oslo, Copenhagen, Glasgow, Dublin and return to New York.

V: 11-day tour—from Rome to Israel, including 3-day Post-Congress International Conference of Surgeons in Tel-Aviv and Jerusalem, and return to Rome.

FOURTH LECTURE SERIES

1959-1960

School of the History of Surgery and Related Sciences
International Surgeons' Hall of Fame
1524 Lake Shore Drive, Chicago

LECTURES BEGIN AT 8:00 P.M.

OCTOBER 20, 1959 . . . *"The History of Allergy"—Dr. Leon Unger, Associate Professor of Internal Medicine and Allergic Diseases, Northwestern University Medical School, Chicago*

NOVEMBER 24, 1959 . . *"The History of Gastroenterology"—Dr. Walter Alvarez, Professor Emeritus, University of Minnesota; Consultant in Medicine, Mayo Clinic; Widely Syndicated Columnist, Chicago*

JANUARY 12, 1960 . . . *"The Physician as a Book Collector—Notes on Famous Libraries"—Mr. Herman Henkle, Librarian of the John Crerar Library; Member of the Society of Medical History of Chicago*

FEBRUARY 2, 1960 . . . . *"Highlights of Orthopedic Surgery Through the Ages"—Dr. Philip Lewin, Professor Emeritus of Orthopedic Surgery, Northwestern University Medical School; Consultant in Bone and Joint Surgery, Cook County Hospital, Chicago*

FEBRUARY 23, 1960 . . . *"The Bookplates of Physicians"—Dr. Morris Fishbein, Professor Emeritus, University of Chicago, University of Illinois; Contributing Editor of Postgraduate Medicine, Chicago*

MARCH 15, 1960 . . . . . *"The History of Blood Transfusion"—Dr. Richard Lewisohn, Distinguished Contributor to the Field of Blood Banking; Consultant at Sinai Hospital, New York City*

APRIL 5, 1960 . . . . . . *"The History of Pulmonary Tuberculosis"—Dr. Jerome R. Head, Associate Professor of Surgery, Northwestern University Medical School; Former President of Suburban Cook County Tuberculosis Sanitarium Board, Chicago*

APRIL 26, 1960 . . . . . . *"Nicholas Senn and the Medical Center of Chicago"—Dr. Manuel Lichtenstein, Chairman, Department of Surgery, Cook County Hospital; Associate Professor, Northwestern University Medical School, Chicago*

MAY 10, 1960 . . . . *"Architects of Chicago Medicine"—Dr. Frederick Stenn, Author of Medical History Literature; Member of American Association of Medical History; Assistant Professor of Medicine, Northwestern University Medical School, Chicago*

The International College of Surgeons

Announces

With Profound Sorrow

the Death

on Monday, January 25, 1960

of

MAX THOREK

M.D., Sc.D., LL.D. F.B.C.S., F.I.C.S. (Hon.), F.P.C.S. (Hon.), F.R.S.M.

Founder

and

Secretary General

of the

International College of Surgeons

Editor-in-Chief of the
Journal and Bulletin of the
International College of Surgeons

In Memoriam

MAX THOREK, M.D.

Dr. Max Thorek, the beloved Founder and permanent Secretary General of the International College of Surgeons, died of a heart attack on January 25, 1960, at his home in Chicago, Illinois.

He had been active in the affairs of the International College of Surgeons and as chief surgeon to the American Hospital until shortly before his death. He was known throughout the surgical world, and was admired and respected by all who came to know him. As an eminent and tireless worker in his chosen profession of surgery, a humanitarian, a linguist who commanded many languages, an expert photographer, a collector of art and antiquities, a musician, an author, a lecturer and a teacher, he was supremely fitted to become the leader that he was. He conceived and founded the International College of Surgeons in 1935, and he advocated the dissemination of modern knowledge of surgery throughout the world by cultivating a friendly, cooperative and spirited membership, without limitation as to creed, race or color.

Born in 1880, he came, a penniless Hungarian immigrant, to the United States, and in 1900 enrolled at the University of Chicago. Through hard work and diligence he managed to maintain himself and to study medicine, obtaining the degree of Doctor of Medicine from Rush Medical College in 1904. He became an attending surgeon at Cook County Hospital and later professor of clinical surgery at the Cook County Graduate School of Medicine, where his courses in surgery were attended by surgeons from all parts of the world. He founded and became chief surgeon to the American Hospital, in Chicago. Numerous honors were bestowed on him by medical societies in the United States and countries throughout the world.

The members of the International College of Surgeons, and all those who knew and loved him, grieve his loss and extend to his wife and son the deepest sympathy in their bereavement.

Henry W. Meyerding
President
International College of Surgeons

In Memoriam

MAX THOREK

M.D., Sc.D., LL.D., F.B.C.S., F.I.C.S. (Hon.), F.P.C.S. (Hon.), F.R.S.M.

Founder and Secretary General
International College of Surgeons
Editor-in-Chief, Journal and Bulletin
International College of Surgeons
1880-1960

The following pages were dictated by Dr. Max Thorek on Wednesday, January 20, at his home, where he was resting following a period of indisposition.

This is, therefore, his last message to the Fellowship of the International College of Surgeons through the medium of this Bulletin.

The Year That Passed

This survey of the year that passed was to have appeared in the January issue of the *Bulletin.* That number, however, through imperious and tragic necessity was dedicated to Ross T. McIntire, and since then I have had to summon up all my resources of strength and philosophy to view the new perspective—a landscape without the figure of my friend.

The chasm of emptiness caused by the sudden death of our eminent Executive Director of the International College of Surgeons is unbridgeable. I mourn him, casting heartfelt maledictions upon the year that took from me among a score of friends and distinguished Fellows of the College, not only the beloved Clement L. Martin, treasurer of the College, and the incomparable Francisco Graña, president of the Peruvian Section and former president of the International College, but also my stalwart Admiral, who had ably aided me to chart the course of our great enterprise.

But days of mourning, by all precepts of wisdom, must be limited. We rise, take into our own hands the unfinished task and once again give direction to our lives.

I look back anew, and among the shadows I see much that is bright.

The year 1959 was one of phenomenal activity in the College.

National Meetings and Congresses

All the National Sections held conspicuously successful meetings and congresses. Argentina, under the presidency of **Prof. Jorge A. Taiana,** undertook a program of communicating regularly with its far-flung membership through a series of highly informative letters . . . **Prof. Leopold Schönbauer,** president of the Austrian Section, was chairman of a brilliant surgical meeting on August 20 in honor of the visit of the International College of Surgeons' Midsummer Tour. The Section also held a meeting of the general assembly on October 27 . . . Belgium had its Annual Surgical Week End, November 14-15, at Bruges, with **Dr. Léopold Lambert** presiding.

Brazil, under the guidance of **Prof. Mário Degni** and **Prof. Matheus Santamaria,** arranged a *Journey to Petrópolis* for the purpose of holding a two-day scientific session in that city, May 30-31; and, on October 18-24, at Poços de Caldas, it staged an important national congress . . . During

The round of tasks that comprises our day leaves us little room for awareness of change in the substance of our lives. Like geologic accretion and erosion, the process is gradual to the point of being imperceptible, save when a catastrophe occurs.

Periodically, however, the cumulative effect becomes apparent. In the spring we see that storms, thaws and floods have washed away the base of a small cliff, leaving a hazardous overhanging ledge, and cast up a new strip of beach some distance away. A small dune has been leveled, a ravine widened. So we hasten to inspect further our little acre and, if no more, note fallen trees and the height of saplings.

In general, we do not even wait for spring, and from the vantage point of the winter solstice scrutinize the landscape of time. Hence the custom of annual reports.

Here is mine for the year 1959.

M. T.

the month of December, at Taipai, Taiwan, the China-Formosa Section met for scientific and organizational purposes under the presidency of **Dr. Hsien-lin Chang** . . . The China-Hong Kong Section greeted the College's Around-the-World Tour and presented an outstanding surgical session. **Dr. S. H. Lin** is the newly elected president of the Section, succeeding the distinguished and beloved **Dr. Arthur Woo,** who remains a member of the Council . . . Ecuador, under the presidency of **Dr. Teodoro Maldonado Carbo,** had a year of dynamic growth. It participated in every major surgical and scientific event in the country and organized a magnificent Inaugural Assembly that attracted surgeons from Bolivia, Peru, Colombia, Cuba and the United States.

The Finnish Section held its annual meeting at Helsinki on February 6 and elected **Prof. Juuso Kivimäki** as its president. The Section also organized an excellent scientific session during the visit of the College Midsummer Tour . . . France, with her flair for the festive, saw a particularly brilliant session of the French Section, June 19-21, at Lyons, with **Prof. Jean Creyssel,** as head of the Section, presiding. On August 25, the Section was host to the Midsummer Tour . . . Hamburg, in Germany, on June 1-3, was the scene of a memorable Congress of German-Speaking Sections of the European Federation of the International College of Surgeons. **Prof. A. W. Fischer** presided over scientific sessions of surgeons from Austria, Germany, the Netherlands and Switzerland . . . In Greece, the annual meeting of the Section (Athens, May 29-30) featured a series of round-table presentations followed by general discussion. **Prof. N. Louros,** president of the Section, also presided over a scientific session organized in honor of the Around-the-World Clinical Tour.

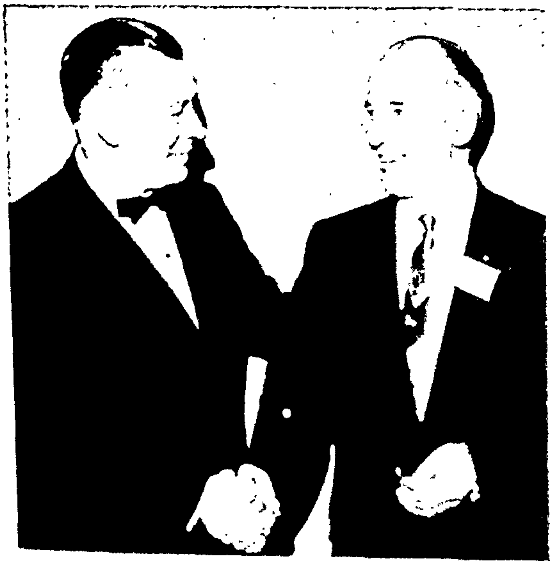
The Indian Section, under the presidency of **Dr. C. P. V. Menon** of Madras, held its annual meeting in Jaipur, in the State of Rajasthan in North India during December. On the occasion of the visit of the Around-the-World Tour, the Fellows of the Section residing in Madras held a joint clinical program with the visitors . . . The Fourth National Congress of the Iranian Section met in Shiraz, April 12-15, elected **Dr. M. Pezechcan** as president and held an outstanding four-day surgical congress . . . Israel has had a resurgence of activity, doubled its membership, and under the leadership of **Prof. J. Asherman** as president and **Drs. E. Lehmann** and **Y. B. Neumann** as secretaries, held consultative sessions with the Around-the-World Tour surgeons and guided them through Israeli institutions. The Section is now organizing the Post-Congress International Conference of Surgeons to be held in Jerusalem and Tel Aviv, May 21-23, 1960.

The Italian Section, under the presidency of **Prof. Pietro Valdoni,** the secretaryship of **Prof. Giuseppe Bendandi** and the cooperation of **Prof. A. Mario Dogliotti,** president-elect of the International College of Surgeons, has held some exceedingly interesting meetings in conjunction with various surgical societies and is concentrating its efforts on plans for the Twelfth Biennial International Congress, which is to be held in Rome May 15-18, 1960 . . . The executive council of the Japan Section met on February 10 in Tokyo and chose **Prof. Hiroshige Shiota** and **Prof. Komei Nakayama** to continue serving respectively as president and secretary. The Section also held a scientific meeting on October 19 upon the occasion of the visit of the Around-the-World Tour, followed by clinical sessions of utmost interest.

The Fellows of the Mexican Section, under the presidency of **Dr. Raul Arturo Chavira,** were concerned largely with scientific matters and participated in the

Congress of the North American Federation . . . The Netherlands Section, under the presidency of Dr. George Chapchal, held its annual meeting July 25-26 in Amsterdam. Fellows of the Section, particularly Dr. J. Glazenburg and Prof. Albertus Kummer, welcomed the visiting Midsummer Tour and shared with the American surgeons scientific discussions and social occasions . . . The Nicaragua Section, with Dr. Jose R. Duron as president, met at Managua July 15-16 . . . The Peruvian Section held its annual meeting in Lima on April 13 and presented an excellent scientific program. The Section is still in mourning for its revered president Francisco Graña . . . The annual meeting of the Philippine Section (Dr. Jose Y. Fores, president) was held on March 3 in Manila. The Section also met upon special occasions: on January 21 in honor of Prof. S. Obrador Alcalde of Madrid, on March 14 in honor of Dr. E. E. Claxton of England, and later in the year in honor of Dr. Max M. Simon of Poughkeepsie, New York . . . The Spanish Section, under the presidency of Prof Martin Lagos, held a scientific session ir Madrid, April 30-May 2, and an executiv meeting, at which Prof. Alfonso de la Peña of Madrid was elected president for the coming year.

Dr. Homer F. Marsh, dean of the University of Miami School of Medicine, addressing the Southeastern Regional Assembly



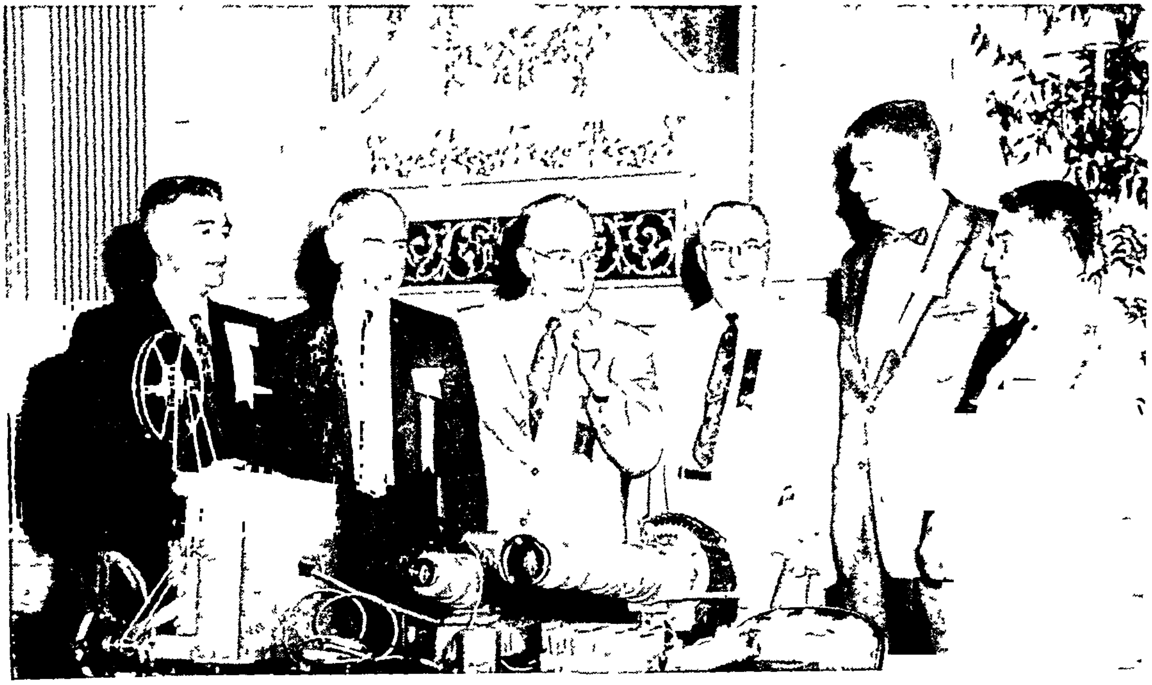
At the Southeastern Regional Assembly, Dr. Harold O. Hallstrand of Miami, chairman, and Dr. Claude F. Mentzer, also of Miami, president of the Florida State Chapter

Under the dynamic presidency of Dr. E Kaiser, of Zürich, the Swiss Section held a scientific meeting, on July 4, devoted to ar analysis of the latest methods of diagnostic examination . . . The Thailand Section Maj. Gen. Sanguan Rojanavongse presiding, held its midyear meeting in Bangkok on May 21 and its Fifth Annual Meeting also in Bangkok, on November 2, coinciding with the visit of the Around-the-World Tour . . . The Turkish Section, under the presidency of Prof. Dr. Fahri Arel, met jointly with the Around-the-World group.

United States Regional Meetings

In the United States, activity in the College was brilliant and continuous.

The year began auspiciously with the phenomenal Southeastern Regional Assembly in Miami Beach, Florida, January 1-7. Dr. Don D. C. C. Robertson of Orland is regent in Florida and **Dr. Harold O. Hallstrand** of Miami served as the inspired and *inspiring general chairman of the* Assembly . . . The Indiana State Chapter honored its regent, **Dr. Paul E. Haley** of South Bend, by a Regent's State Meeting in Indianapolis on May 6. **Dr. John W. Emhardt** was chairman of the arrangements and program committee . . . The annual meeting of the Alabama Surgical Section was held in Huntsville, May 21-22, with an extraordinary program that included a conducted tour of the Redstone Arsenal and the presence of both United States Senators from Alabama. **Dr. Paul W. Shannon** of Birmingham is regent of Alabama, and **Dr. Edwin V. Caldwell** is president of the Surgical Section . . . The Spring Meeting of the New York State Surgical Section was one of the outstanding events of the College Year. It was held at Kiamesha Lake, May 28-31. **Dr. Horace E. Ayers** of New York City, regent of the Section, was general chairman of the occasion, and **Dr. Milton Weinberg** *of Jackson Heights* served as chairman of the general arrangements committee . . . The Tennessee State Chapter held a luncheon session in connection with the Tennessee Valley Medical Assembly in Chattanooga on September 28. **Dr. William G. Stephenson** of Chattanooga is both founder of the Assembly and state regent for the International College of Surgeons. **Dr. Guy M. Francis** is president of the Tennessee State Chapter of the College . . . The honor of being the last of these brilliant assemblies for the year 1959 went to the Western Regional Meeting which was held in Las Vegas, Nevada, November 22-24. **Dr. Frederick M. Turnbull, Jr.**, of Los Angeles was secretary and treasurer of the meeting, and **Dr. J. Norman O'Neill**, also of Los Angeles, was chairman of the program committee.



At the Tennessee State Chapter Meeting: Dr. George H. Henshall, Chattanooga; Dr. J. Grafton Love, Rochester, Minnesota; Dr. Dwight E. Harken, Boston, Massachusetts; Dr. William G. Stephenson, Chattanooga, Regent of Tennessee; Dr. Guy M. Francis, Chattanooga, president of the Tennessee Chapter, and Dr. Carl A. Hartung, of Chattanooga

Distinguished guests from France at the North American Federation Congress: Dr. Jean Vaysse of Paris, Dr. J. André Thomas of Paris and Prof. Dr. Raymond Darget of Bordeaux with the author and Prof. Dr. Jean Creyssel of Lyons

Twenty-Fourth Annual Congress of the North American Federation

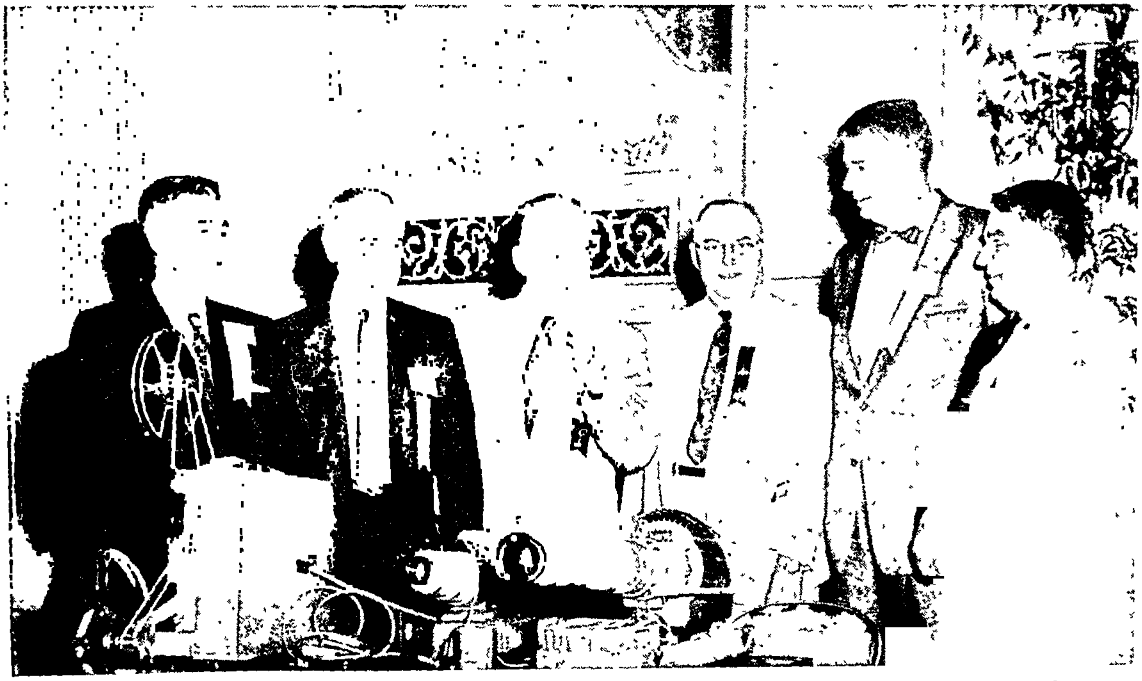
The Twenty-Fourth Annual Congress of the North American Federation of the International College of Surgeons, held in Chicago, September 13-17, with its crowded general assemblies and interest-arousing specialty sessions, is still so vivid in the minds of all of us as to render an account of its details quite superfluous. But it does seem to me that never before has the spirit of Fellowship in the College been so warm and so all-embracing as it was during that Congress. The banquet was truly a joyous ceremonial sharing of bread by brothers whose one purpose was to place the gift of their science and their skill at the service of the whole world. The Convocation, with the participation of my dear friends, Henry Meyerding, Edward Compere, Horace Turner, William Lauten, Ernest Purcell, Francis Wolfe, Claire Carr, Walter Burket, Ross McIntire, Jean Legault and E. N. C. McAmmond, was a glorious celebration of a year of great achievement and the induction, during twelve months, of fifteen hundred new members. The Convocation pageant always appeals to my heart—the colors of academic robes, of massed flags, of flowers; the music, soft and tender when we read the names of Fellows who are with us no more, but stirring and strong when our new Candidates march to their places, and reaching a sublime climax of exaltation when they are inducted into our Fellowship; the words of wisdom uttered by priest, minister and rabbi, and by the distinguished Convocation Orators. I thought, this year, as the minutes passed, that this was the most meaningful Convocation of them all, a triumphant one!

The Hall of Fame

The International Surgeons' Hall of Fame was the scene of varied activity all the year. The Hall of Fame Committee, under the chairmanship of Dr. Herbert Pollack was devotedly assiduous in its work. Important additions came in many forms.

Montague Proctologic Library and Museum

I must single out the munificent gift of Dr. Joseph Franklin Montague of New is regent in Florida and **Dr. Harold O. Hallstrand** of Miami served as the inspired and inspiring general chairman of the Assembly . . . The Indiana State Chapter honored its regent, **Dr. Paul E. Haley** of South Bend, by a Regent's State Meeting in Indianapolis on May 6. **Dr. John W. Emhardt** was chairman of the arrangements and program committee . . . The annual meeting of the Alabama Surgical Section was held in Huntsville, May 21-22, with an extraordinary program that included a conducted tour of the Redstone Arsenal and the presence of both United States Senators from Alabama. **Dr. Paul W. Shannon** of Birmingham is regent of Alabama, and **Dr. Edwin V. Caldwell** is president of the Surgical Section . . . The Spring Meeting of the New York State Surgical Section was one of the outstanding events of the College Year. It was held at Kiamesha Lake, May 28-31. **Dr. Horace E. Ayers** of New York City, regent of the Section, was general chairman of the occasion, and **Dr. Milton Weinberg** of Jackson Heights served as chairman of the general arrangements committee . . . The Tennessee State Chapter held a luncheon session in connection with the Tennessee Valley Medical Assembly in Chattanooga on September 28. **Dr. William G. Stephenson** of Chattanooga is both founder of the Assembly and state regent for the International College of Surgeons. **Dr. Guy M. Francis** is president of the Tennessee State Chapter of the College . . . The honor of being the last of these brilliant assemblies for the year 1959 went to the Western Regional Meeting which was held in Las Vegas, Nevada, November 22-24. **Dr. Frederick M. Turnbull, Jr.**, of Los Angeles was secretary and treasurer of the meeting, and **Dr. J. Norman O'Neill**, also of Los Angeles, was chairman of the program committee.



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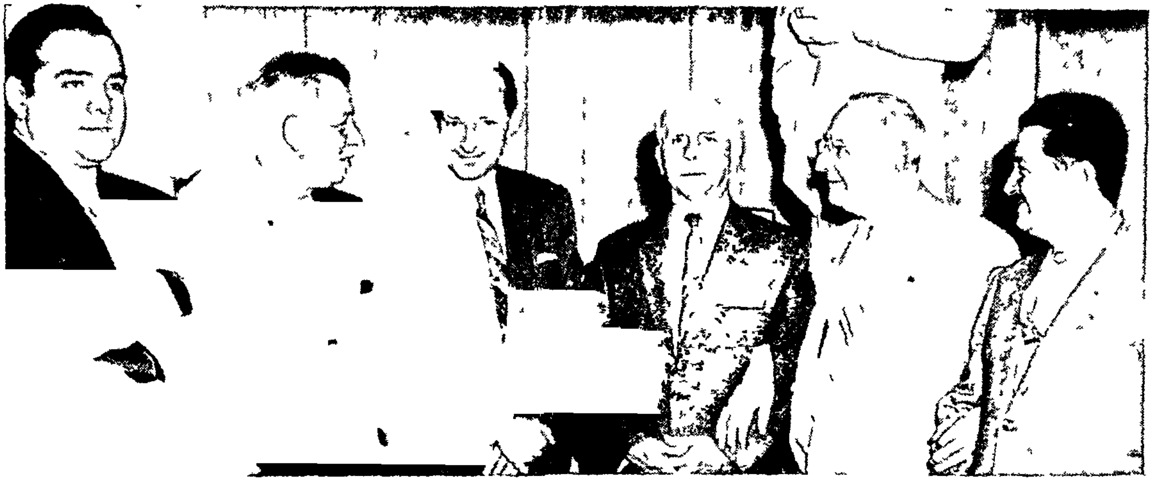


At the North American Federation Congress, officers of the Ecuadorian Section meet with United States leaders: Dr. José Ramirez D., Dr. Harry E. Bacon, Dr. Francisco Rizzo V., Dr. Fernando Gutierrez H., the author and Dr. José Molestina R.

York City, who is presenting to the Hall of Fame and School of History of Surgery and Related Sciences his extensive proctologic library and an interesting collection of both old and modern rectal instruments. The collection will be housed in a special room in the Hall of Fame, the construction of which Dr. Montague is supervising personally.

The Third Lecture Series

The Lecture Series at the School of the History of Surgery and Related Sciences at the Hall of Fame have become an integral part of the scientific and intellectual life of Chicago and an asset to it as one of the world's great medical centers. The Third Series had the honor to present to greatly appreciative audiences **Dr. Ilza Veith, Dr. Morris Fishbein, Dr. Charles U. Letourneau, Dr. A. F. Lash, Dr. Percival Bailey, Dr. George S. Lull, Mr. Thomas S. Jones, Dr. Edward L. Compere, Dr. Francis L. Lederer and Dr. Wayne B. Slaughter.** It was a brilliant series, and I think it is being equalled by the current series.

Visitors from Far and Near

Visitors to Chicago frequently include the Hall of Fame in their schedules, and particularly so if they are interested in the medical sciences. For medical and premedical students, of course, a tour and even repeated visits are a must. The curators at the Hall are happy to welcome individual callers and whole classes coming together.

This fall, on the afternoon of Thursday, September 3, it was my very great happiness personally to greet at a reception and open house in the Hall of Fame delegates to the Second World Conference on Medical Education and to note with delight how many of these distinguished educators were Fellows of the College.

Educational Activities

The year 1959 saw a marked increase in the educational activities of the Sections. Postgraduate classes, seminars, lecture courses vied with each other, in one medical center after another, which were either sponsored by the College or headed by a distinguished Fellow. The number of prizes and awards and scholarships seemed to have multiplied. The good and wonderful ladies of the Woman's Auxiliary, with their devotion to College purposes, which, I sometimes think, exceeds that of their distinguished but busy husbands, are making a genuine contribution to the future of surgery, and I pray that the work of their hands will be blessed and will prosper.

Honors and Distinctions

One of the sources of great joy to me was news of honors which had come to Fellows of the College. Professional recognition was the general rule, by scientific organizations or medical schools or philanthropic foundations, and I rejoiced with each and every recipient of his well-earned reward. Some of the honors, however, came from outside the surgical or scientific circle. Communities, states, even nations, have seen fit to single out our Fellows of the International College of Surgeons and to praise them for their manifold services and accomplishments. In France, two of our Fellows, **Prof. Georges Portmann** of Bordeaux and **Dr. Bernard Lafay** of Paris, are members of the Senate of the Republic, and Prof. Portmann is its vice-president.

And, speaking of honors, I should be overweeningly modest (never one of my major sins!) if I did not take pride in the roster of distinguished personages upon whom the International College of Surgeons delighted to confer Honorary Fellowship or Membership. Recognition by the College must ever remain a very high distinction indeed.

International Tours

I wrote only recently—in the December issue—of my appreciation of the value of our International College of Surgeons Tours. The two Tours of 1959 truly were emissaries of good will and harvesters of much good. I recall the first of these tours, which I myself led. It was a superlative experience in a life crowded with experiences, and I rejoice when my friends, Ross McIntire, Edward Compere, or Harry Bacon, go off with their associates on one of these journeys which are missions of surgical and scientific fraternity.

In Helsinki, Finland, a garden party given by the Honorable John D. Hickerson, United States ambassador to Finland, and Mrs. Hickerson, at the United States consulate, for the Finnish Section of the International College of Surgeons and members of the Clinical Tour of Northern Europe led by Ross T. McIntire

Dedications in the Hall of Fame

Symbolically, I choose the dedication of rooms in the Hall of Fame to France, Mexico, Spain and the Netherlands, which took place on the eve of the September Congress in Chicago, as the event of 1959 that was most meaningful. I know the choice is subjective. It was to me the realization of a life dream and from that happy experience I drew sure hope that many more of my hopes and aspirations will in the fullness of time come true. There were my old friends from abroad—**Darget, Creyssel, Gonzalles-Ulloa, de la Peña**—as well as new friends, including ambassadorial and consular representatives of nations I love and honor, and my beloved American comrades, all about me. As we progressed from exhibit to exhibit, each claiming our utmost degree of wonder and admiration, and as we gathered, sitting and standing, in the crowded Hall of Immortals, I saw how united we all were in our earnest desire to fulfill the promise of the International College of Surgeons, and I was very happy. Later, alone at my desk, I wrote:

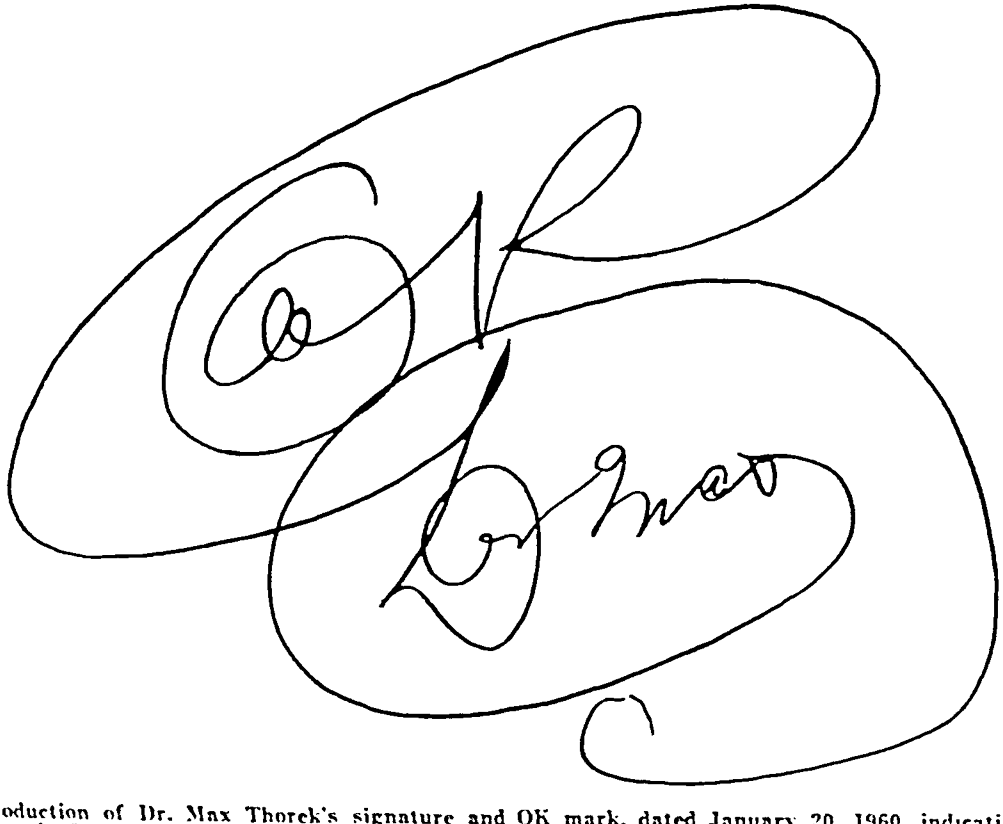
> What, at that moment of the dedication, could I say? What can I say now? I thanked all those, even as I thank them now, who selflessly and devotedly, in all the Sections of the College, had made my dreams come true. I thanked, even as I continue to thank, very humbly, that Destiny which has permitted me to live among those I love and together with them rejoice over the ingathering of the fruit of my own sowing.

To these words I add no more, except to convey to every member of the International College of Surgeons my own confident feeling of assurance that the year 1959, with its inescapable due of grief and pain, was outstandingly a year of achievement and of triumph. Yet, furthermore, I intuitively know it is but a steppingstone to the bright future I envisage for the International College of Surgeons.

Max Thorek

Among those who arrived early for the dedication ceremonies and paused at the entrance to the Surgeons' Hall of Fame, were M. Béliard, Mlle. Lesecq, Prof. Creyssel, Ambassador Carlos Darío Ojeda, Sra. Gonzales-Ulloa, Dr. Gonzales-Ulloa, Dr. Isquierdo, Dr. Meyerding, Prof. de la Peña, Mme. Darget, Prof. Darget, the author, Mr. Graafland and Dr. Ross T. McIntire

At festivities in honor of the dedication of rooms in the International Surgeons' Hall of Fame: Mr. Jean Béliard, consul general of France in Chicago; the author; Mlle. Elisabeth Lesecq, representing M. Chenot, minister of public health in France, and Dr. Henry W. Meyerding, president of the College



Reproduction of Dr. Max Thorek's signature and OK mark, dated January 20, 1960, indicating his approval of "The Year That Passed," perhaps also expressing his ultimate contentment with all the years he had seen go by

In Memoriam

MAX THOREK

M.D., Sc.D., LL.D., F.B.C.S., F.I.C.S. (Hon.), F.P.C.S. (Hon.), F.R.S.M.

Founder and Secretary General
International College of Surgeons

Editor-in-Chief, Journal and Bulletin
International College of Surgeons

1880-1960

Max Thorek, Founder and Secretary General of the International College of Surgeons and Editor-in-Chief of the *Journal* and *Bulletin,* died at his home in Chicago on Monday, January 25, 1960.

Dr. Thorek had been indisposed for some weeks. On Sunday, January 24, he suffered a heart attack, from which he failed to rally. Death came at ten o'clock, Monday evening. Mrs. Thorek, his beloved Fim; his son, Dr. Philip Thorek, and other members of his family were about him.

The funeral was held on the afternoon of Wednesday, January 27. Rabbi Louis Binstock, of Temple Sholom in Chicago, read the service and delivered a eulogy.

Among the assembled mourners were eminent surgeons who had traveled many hundreds of miles to be present. Others were Dr. Thorek's friends, associates and patients. All professions, all walks of life, were represented. Dr. Max had loved to quote: *"Homo sum, humani nihil a me alienum puto."* The reverse was also true. He was a stranger to no one.

Men and women in great number, each conscious of a unique bond of understanding and sympathy between himself and this distinguished and humane surgeon, came to do him honor. They filed past his bier while he lay in state, and on the day of the funeral they came early. After the pews were filled, people stood among the flowers that lined all the walls, men and flowers alike in tribute and universal love for him.

Man of peace, he lay with a guard of honor on either side of his coffin. The surgical nurses of his hospital, capped and white-gowned, watched over him, faithfully and alertly, even as through the years they had worked with him.

He was escorted to his grave by another guard of honor—officers, regents and eminent Fellows of the College. The first of the active pallbearers was the President of the United States Section of the International College of Surgeons. Beside him walked a young Associate of the College from India, at present a resident at the American Hospital. Unaware, they were symbolic of Dr. Thorek's deep reverence for excellence in surgery and his abiding faith in the youth of his profession.

The graveside prayers were brief. The Rabbi pronounced the final Benediction upon Max Thorek, son of his people and of all humanity, and blessed those who mourned him. He was then left to rest in the family tomb. Only the flowers crowded about him.

Max Thorek's homecoming was accomplished.

Horace E. Turner

EULOGY

Max Thorek—An Extraordinary Man

RABBI LOUIS BINSTOCK

TEMPLE SHOLOM, CHICAGO, ILLINOIS

When one stands too near a mountain, he cannot behold it in all its majesty and mystery. It is only when he sees it from afar, observes carefully its lines and proportions, lifts his eyes to its summit as it reaches into the heavens, that he begins to catch some glimpses of all its wonder.

So it is with a great genius, a towering figure among the children of men. And yet, even we who were privileged to be close to our beloved Dr. Max Thorek, an extraordinary, amazing, many-sided and multi-faceted mountain of a man, whose spirit reached a very high summit of achievement and contribution here upon earth, we too caught some of the lines and proportions of the qualities that fashioned him. We knew that even in his earliest teens he had already translated a complicated textbook from the German (many of the passages were very difficult) into English. He soon became a very gifted linguist, able to speak and write more or less fluently at least six different languages. He mastered many works of classic literature. He loved music and became an excellent violinist, providing much joy for himself and his loved ones and friends.

He fashioned a home that was filled with the richness of a wide range of culture, thus molding and fashioning all those who were part of that home, especially the members of his family, in his own image, inspiring them to walk in his paths and to seek to reach to his heights. He became one of the world's foremost and renowned photographers, writing an authoritative work entitled *Creative Camera Art.* He wrote a number of medical textbooks; one of them, *Surgical Safeguards and Errors,* was used by the Armed Forces in World War II, and probably was responsible for the saving of thousands upon thousands of the lives of the sons of our nation. He wrote an autobiographical work, *A Surgeon's World,* which reveals a high degree of literary talent in style and content. In addition to all these creative achievements and contributions, which obviously must have required years of hard study and labor, he still managed to be a kind, loving, thoughtful and inspiring husband and father—so loving and inspiring that he very naturally elicited from his equally loving and adoring wife and son great affection and admiration, and also their eager sacrificial cooperation in all his ventures and their devoted care in his times of trial and difficulty.

Essentially, however, he was a builder, an organizer and an administrator. Here we are reminded of two other extraordinary, amazing men, both of them also great geniuses and towering figures of achievement and contribution, many-sided and multi-faceted. One of them lives in our time, Albert Schweitzer, equally famous as philosopher, theologian, musician, physician and, most of all, as noble humanitarian. Schweitzer, however, will be remembered most for the building of a hospital down in one of the darkest areas of the jungles of Africa in Lambaréné, where he still ministers to the most neglected and forgotten of the children of men, bringing them out of disease into health, out of darkness into light, out of the shadow of death into the sunshine of life.

So, also, Dr. Thorek will be remembered for a hospital which he almost single-handedly built in our community, remaining its administrator and working within its walls as a surgeon almost to his last day upon earth. His beloved son likes to recall in these latter years that when his father knew the "great shadow" was gradually lowering its dark mantle over him, he would ask: "Will I be at work tomorrow?" At each dawn he rejoiced that God permitted him once more to work for the sick and the needy, to help his fellowman.

But the greatest institution which he fashioned—one which will stand as an everlasting monument to his creative genius—is the International College of Surgeons. This great world organization he again almost single-handedly (and yet we must never forget that probably without the cooperation and inspiration of his wife he might never have been able to fashion all its marvelous details) built and caused it to encircle the globe.

Thus, he who was already famous in our community and in this country, and to some degree in other countries, became a world figure. Because of his ability to communicate through so many different languages, he was able to come close to the minds and hearts of men and women among all peoples and nations, crossing every barrier of class and color and creed. One of his prized possessions is to be found in his living room—a photograph of his audience with the late Pope, which shows him shaking hands with His Eminence and the spirit of brotherhood and goodwill is revealed in both their faces.

The other towering figure to whom we may compare Max Thorek is Moses Maimonides, who lived in the Middle Ages and of whom our great Jewish scholars have said: "From Moses to Moses there was none like Moses." Moses Maimonides was also many-sided and multi-faceted—equally great as scholar, philosopher, astronomer, physician—sacrificial servant not only of his own Jewish community, but of the Arab country in which he lived, serving as special physician to the Sultan. There are two letters which Maimonides wrote to a pupil and a friend which are highly treasured and which make manifest the qualities of an ideal physician and an extraordinary, amazing personality. In one of these letters he says: "You know how difficult this profession is for one who is conscientious and exact and who states only that which he can support by argument or authority." This sentence that came out of a life that was filled with activity almost twenty-four hours a day and that was dedicated to God and man, might easily have been the utterance of Dr. Thorek, left as an expression of a basic quality of his spirit. The other letter, when you read it, makes manifest the qualities of high intelligence and great industry which enabled Maimonides, in the midst of all his numerous activities, to produce so many monumental creative works, to answer letters from all parts of the world addressed to him by thousands of individuals, and at the same time to administer the affairs of the Jewish Community of Cairo, in which he took a leading part. Here again we have what appears to be a description of our beloved Dr. Max Thorek, a mountain of a man, an extraordinary, amazing genius.

He now not only belongs to the world, but, as was said of Abraham Lincoln, "he belongs to the ages." May God grant him reward for all his love and labor, sacrifice and service—above all, the reward of everlasting peace—and may his loved ones find continuing pride and joy in their heritage, ever-growing inspiration from the gifts he placed upon their altar, as well as upon the altar of humanity.

The International College of Surgeons begs to extend its gratitude to those who aided at the final rites for its Founder and Secretary General, in Chicago, Illinois, on Wednesday, January 27, 1960.

HONORARY PALLBEARERS

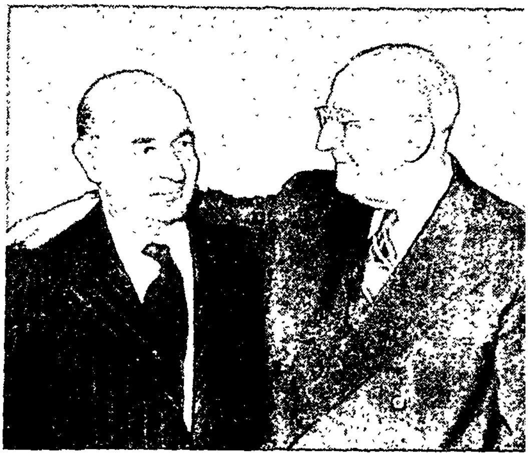
Dr. David B. Allman
Dr. Lyon H. Appleby
Dr. Horace E. Ayers
Dr. Harry E. Bacon
Dr. Anthony M. Barone
Dr. Moses Behrend
Mr. Cecil J. Birtcher
Mr. Joseph J. Boris
Dr. M. Leopold Brodny
Dr. Alexander Brunschwig
Dr. Walter C. Burket
Dr. Earl I. Carr
Dr. August F. Daro
Dr. Joseph M. de los Reyes
Dr. Virgil T. De Vault
Dr. Gilbert F. Douglas
Dr. Morris Fishbein
Dr. Ernst Haase
Dr. Allan B. Hirschtick
Dr. Claude J. Hunt
Dr. Jean Paul Legault
Dr. Philip Lewin
Dr. Manuel Lichtenstein
Dr. George F. Lull
Dr. E. N. C. McAmmond
Dr. William M. McMillan
Dr. Karl A. Meyer
Dr. Henry W. Meyerding
Dr. Park Niceley
Dr. Oscar B. Nugent
Dr. John B. O'Donoghue
Dr. Neal Owens
Dr. Samuel S. Peikoff
Dr. Louis F. Plzak
Dr. Herbert Pollack
Dr. Ernest F. Purcell
Dr. Peter A. Rosi
Dr. Curtice Rosser
Mr. Edwin Speidel
Dr. George J. Strean
Dr. Chester W. Trowbridge
Mr. Milton J. Upsher
Dr. James W. Watts
Dr. Francis D. Wolfe

ACTIVE PALLBEARERS

Dr. Edward L. Compere
Dr. Murray Franklin
Dr. Francis L. Lederer
Dr. Adolph Maller
Dr. Jerome Moses
Dr. Jay Drishna Pandit
Dr. Fritz Rothbart
Dr. Horace E. Turner

Max Thorek With Some "Dear Good Friends"

In Vienna, he posed with particular delight together with Prof. Dr. Hans Finsterer, Dr. Henry W. Meyerding and Doz. Dr. K. Chiari



"In *him* I found a brother," he wrote of Prof. D Felix Mandl of Vienna, Austria

In New York, at a dinner, he embraced Dr. Harry E. Bacon of Philadelphia and Dr. Alexander Brunschwig of New York City

In Geneva, Switzerland, with Prof. Dr. and Mme. Albert Jentzer

MAX THOREK

M.D., F.I.C.S. (Hon.)

Founder and Secretary General
International College of Surgeons

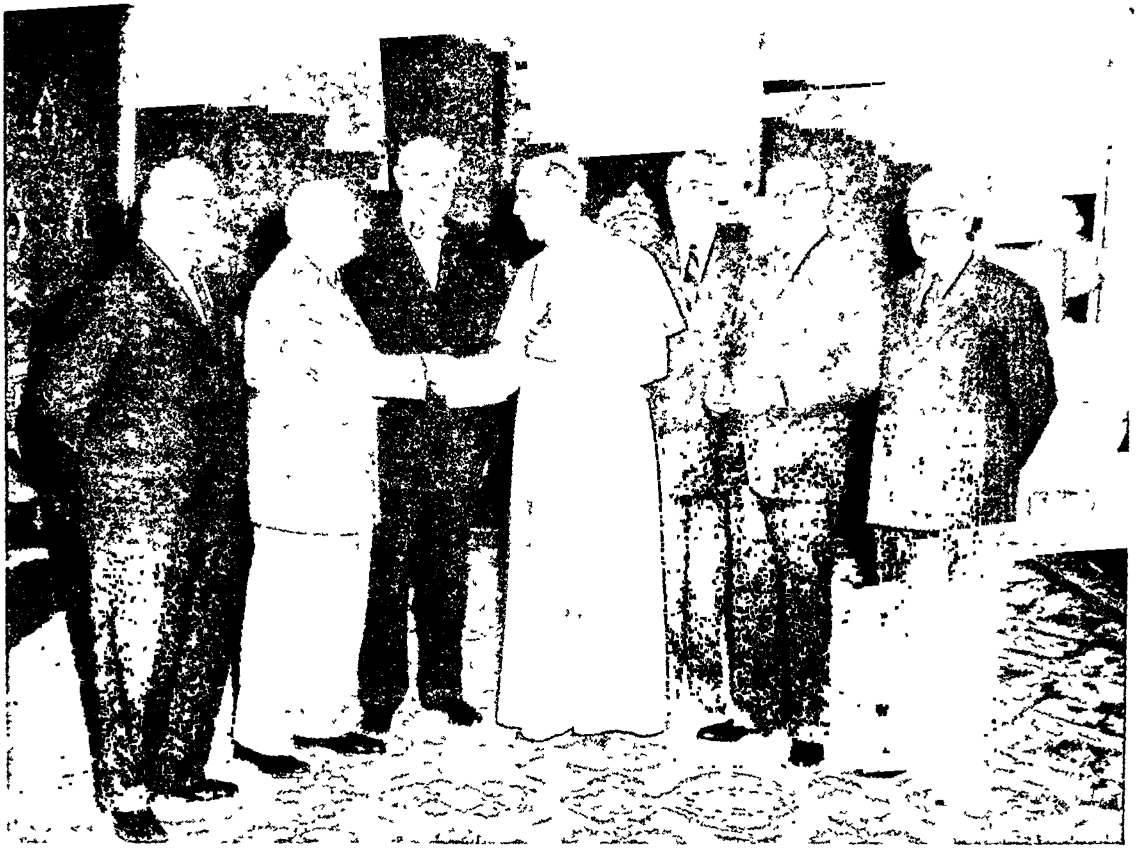
1880-1960

Dr. Max Thorek died six weeks before the date that would have marked his eightieth birthday, leaving a world aghast at the calamity of his passing.

Upon approaching so patriarchal an age a man would be expected to think that his work had been largely completed, particularly so if during the years of his life he had met every claim upon him with vigor and ability, reached every goal which his eager youth had charted, and experienced rare triumphs and deep satisfactions. Surely, then, some little space of leisure should have been welcome to him. Instead, as Max Thorek's physical strength was ebbing, his agile mind was weaving plans and projecting programs of action. He himself was making decisions, carrying on his world-wide correspondence and supervising each detail of his multifoliate activities.

Max Thorek's life was no brief candle, burning either thriftily at one end or recklessly at both. It was a blazing candelabrum—a torch—a chandelier with dancing chiming iridescent crystals. When

An intimate ceremonial occasion in Japan



A memorable audience with His Holiness Pope Pius XII

that light was extinguished, our world was perceptibly darkened.

The strangely vivid life and the electrically charged personality of Max Thorek defy glib summation. Yet they invite analysis, and an impulse, not to be denied, has impelled the writer of this article to reread Dr. Thorek's own story of his life, the book he called *A Surgeon's World,* in the hope of finding in it something not quite apprehended in previous readings. The hope was not vain. In the perspective of the completed circle of life accomplished, truths flash out clearly.

Even at the high tide of his life activity, when he was preparing the *Foreword* to his book, Dr. Thorek was aware of fulfillment. Many years before he entered the Valley of the Shadow, he knew he would not be making that journey empty-handed or empty-hearted. He wrote:

> I have sighed deep and I have laughed free. I have known the utter bitterness of poverty, I have basked in the sunlight of success. I have known hunger and I have sat at the tables of plenty. I have endured loneliness, and I have been given love.

Of his childhood in a lively town in the old Austro-Hungarian Empire, he remembered much. There the roots of his being, of his love, of his ambition, had sprouted. Transplanted to the soil of Chicago, they had grown down to bedrock, tapped springs of clean water and found rich nurture. Removed from the stultifying shade cast by ancient growths of prejudice, under the sun of freedom and opportunity, the tree of his life flourished.

The Thorek family—father, mother and son—when they abandoned their

European home, left a small grave which held the body of their Philip, tiny victim of mob madness. Within the grave, the parents also left their youth and such gaiety as cannot survive certain endured horrors. Beyond that they left little of value.

They brought with them their love, their reverence for learning and particularly for the medical profession, their responsiveness to the arts and their dedication to hard work.

Max, it is true, left behind him his lovely Fim, but she kept her true promise and joined him soon. Soon enough, when we consider her extreme youth!

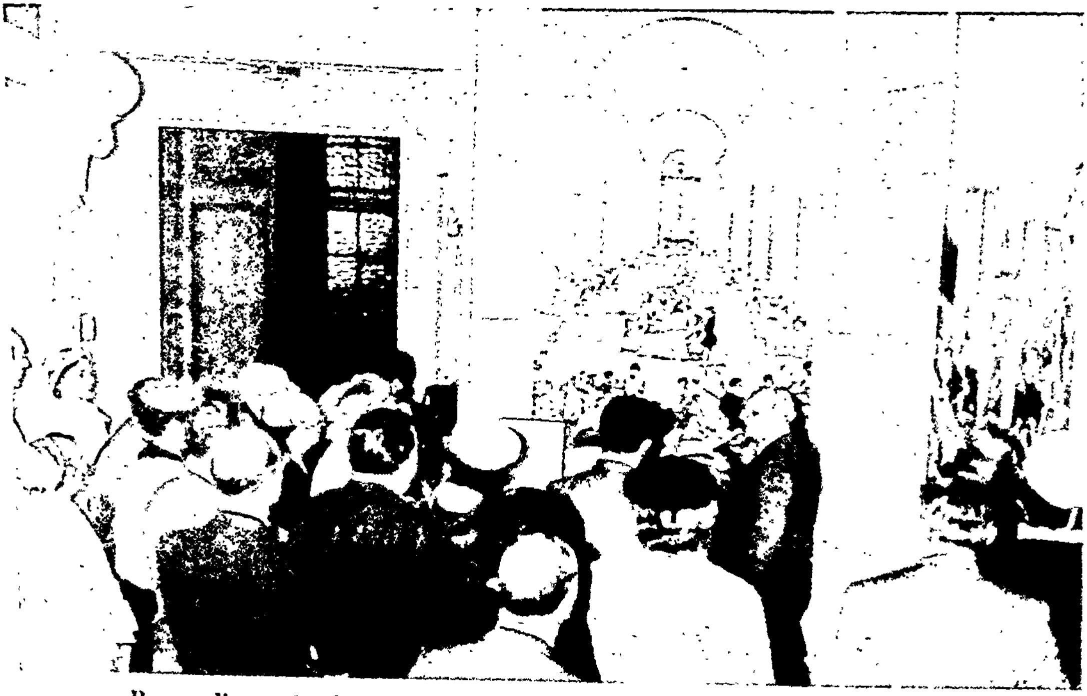
Meanwhile, the young man's (He was little more than a boy!) interest, hope, ambition, burst into exuberant flowering. He worked, he studied, and he worked again. He played, and even that was work —hard professional work that bought his bread and paid his carfare.

He played the violin at clubs and at parties that he might live and he played the snare drum in the University of Chicago Varsity Band that he might study. In 1904 he was graduated from Rush Medical College. The following year Fim and he were married, and the year after that they happily welcomed their son Philip.

Chicago at the turn of the century offered prizes to her sons, but at a price of work and effort that only the strong could pay. Max Thorek paid the price naturally, joyously. He loved everything beautiful. But he wasn't squeamish about the dirt and the din of the old West Side, where he first lived and practiced. Nor was he condescending toward the poor, the ignorant—even the depraved—who were his first patients.

He moved rapidly out of the Ghetto and the immigrant section. So did many of his patients, and all his life they were among his faithful and cherished friends.

Other friends and patients came from



Personally conducting a tour of the International Surgeons' Hall of Fame

In Amsterdam of the Netherlands, making a brief address at a reception

that fascinating world which Dr. Max entered through his fiddle playing and his love for the theatre. Actors, musicians, stars of the opera, practitioners of many arts, offered him the stimulation of their imaginative and quickly responsive companionship during those brief snatches of time which they and he could manage to wangle from their crowded schedules.

For simultaneously he was charting his course into surgery, studying his specialty, and building the American Hospital. Ultimately, the American Hospital s
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was interested in every surgical innovation and in every hypothesis in allied sciences which might prove of service to his sovereign queen—surgery. Of these years he writes:

> Short twenty-four hour days! How could any man arrange them so that he could do the things he wanted to do in operating room, in laboratory, in study? I found I could cut such non-essentials as sleep and leave myself perhaps twenty hours a day for work. But what a short day twenty hours is when your brain teems with ideas and your hands itch with eagerness for work.

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At the entrance to the International Surgeons' Hall of Fame with surgeons, and their wives, from France, Germany and Switzerland

In Karachi, Pakistan, at a reception given by Prof. and Mme. A. M. Malik

In Amsterdam of the Netherlands, making a brief address at a reception

that fascinating world which Dr. Max entered through his fiddle playing and his love for the theatre. Actors, musicians, stars of the opera, practitioners of many arts, offered him the stimulation of their imaginative and quickly responsive companionship during those brief snatches of time which they and he could manage to wangle from their crowded schedules.

For simultaneously he was charting his course into surgery, studying his specialty, and building the American Hospital. Ultimately, the American Hospital was moved to new quarters on Irving Park Road and addition after addition was constructed to house its facilities. Dr. Thorek supervised the activities of the hospital and was its Surgeon-in-Chief. He was attending surgeon at Cook County Hospital and consulting surgeon at the Municipal Tuberculosis Sanitarium. He was appointed professor of surgery at the Cook County Graduate School of Medicine. He was interested in every surgical innovation and in every hypothesis in allied sciences which might prove of service to his sovereign queen—surgery. Of these years he writes:

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With the passage of time, other activities were added, such as writing and editing. And, as a release from the tensions of surgery, there was a succession of amiable hobbies, but in every case these interests provided a challenge which invited involvement and proficiency barely short of the professional.

He played the violin with the Chicago

At the entrance to the International Surgeons' Hall of Fame with surgeons, and their wives, from France, Germany and Switzerland

In Karachi, Pakistan, at a reception given by Prof. and Mme. A. M. Malik

At a College Convocation, assisting in the conferring of Honorary Fellowship upon Prof. Albert P. LaChapele of Bordeaux, France

In Bombay, India, at a reception given by Prof. and Mme. R. N. Cooper

Business Men's Orchestra; he helped to found The American Physician's Art Association; he began to collect *objets d'art,* old books and autographs; history fascinated him—surgical history and French history in particular; and he became an eminent amateur photographer.

Frankly, however, these were but the morganatic alliances of his fancy. His true mind's worship was reserved for his queen goddess, to whom as a child he had been dedicated by his parents and whom he was to serve to his last breath—surgery. All other interests were subject to her imperious reign and did her fealty. Photography became her handmaiden, and those fabulous, long-looked-forward-to journeys to Europe for rest and recreation turned into one long protracted clinic study and a series of consultations with the world's leading surgeons.

With what were those consultations and discussions concerned? With the myriad of problems that beset men, and especially surgeons, during the eventful decades of the twentieth century. One problem, however, was persistent.

Of that problem, Dr. Thorek wrote:

> Even when I was occupied with writing, I continued to work on other plans to reach the young surgeons. I thought of their relation to surgical societies. It has always seemed to me the height of stupidity that surgical societies should limit membership arbitrarily, as though they were some kind of industrial cartels instead of channels for the exchange of professional knowledge. How can anyone decide that only one hundred and fifty or two hundred surgeons in a given country are competent and able enough to be included in such a society? In a country as broad as the United States there should be—must be—many, many times that number of competent men. Otherwise the profession is indeed in a sad way. To limit membership thus arbitrarily is not worthy of our great profession which is not concerned—or should not be concerned—with killing competition, but is morally bound to the greatest possible

In the International Surgeons' Hall of Fame, with his intimate friend, Edwin Speidel

In his office at the American Hospital with Dr. George F. Lull

In Rome, with Prof. Dr. Raffaele Bastianelli

diffusion of the soundest possible knowledge. The limitation obviously works greatest handicap to the young men who are just beginning their careers, the young men who most need the advantages which come with association with their peers and their superiors if they are to grow *in stature.*

It was not for me to set the policies of existing societies and associations. And it seemed to me that every possible group of specialists already had its national and international society. The eye specialists, the nose and throat men had theirs—the neurologists, the obstetricians, the psychiatrists, the gastroenterologists and seemingly all others, were organized.

But, wait a moment, what about the surgeons? Wasn't there room here for a new kind of international organization? And wouldn't the men who had vision and courage to build such an organization have the great opportunity to fashion it according to their own ideals?

My correspondence with fellow surgeons in many lands, always large, grew to tremendous proportions. I found many kindred minds, men troubled as I was troubled, men thinking toward the same solutions I had glimpsed. Somewhere in that exchange of thoughts, the idea of the International College of Surgeons crystallized. Men separated from one another by thousands of miles of land and sea began to work to make it a reality. Before the end of the 1930's its organization would be complete.

Thus would begin Max Thorek's unique contribution to the development of surgery. This is how he commented on the matter in his book:

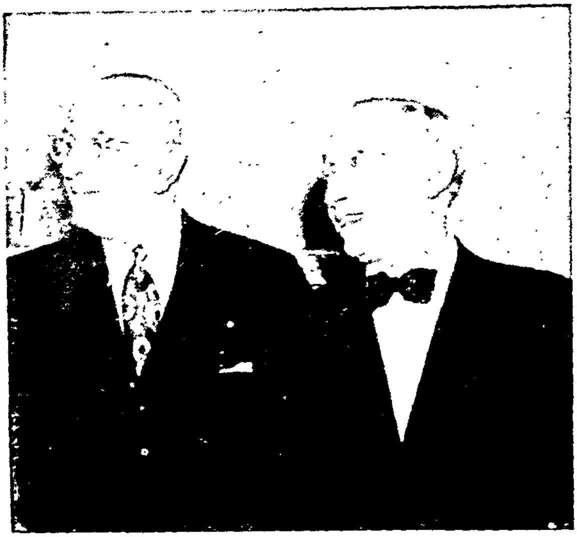
> With deep satisfaction I watched the development of the International College of Surgeons. Here, as in my own more limited field of action, dreams were being fulfilled and hopes realized.
>
> To my great joy I saw that this College was to be, *not merely a surgical society*, in which membership would be a

In Chicago, at the entrance to the College Home with Prof. Dr. A. Mario Dogliotti of Turin coveted mark of distinction for a few fortunate men. It was to be a true college whose prime function would be to teach younger men, and older men, and all who thirsted for knowledge of whatever age. Every man in it would be at one and the same time teacher and student.

I found myself thinking of the medieval university. I remembered how scholars traveled the length and breadth of a Europe much longer and broader than it is today to sit at the feet of learned men, now at Paris, now at Padua, now at Oxford. I remembered that those days when learning knew no national boundaries had been days when Europe had attained a spiritual unity lost and all but forgotten since then. I hoped that something of the same idea would be built into the new institution. Perhaps it could become, not only a channel through which surgical knowledge could flow quickly, easily, to all parts of the world, not only a source of encouragement and inspiration for the ambitious youth of our profession, but also a force making for international understanding and good will and peace.

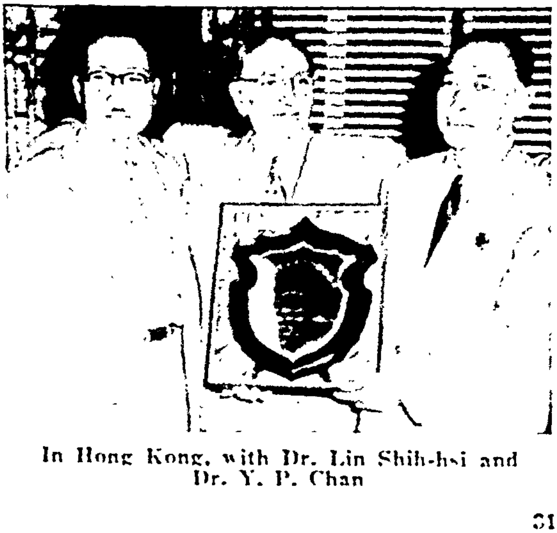
. . . In many parts of the world where my surgeon friends lived, the International College of Surgeons was becoming more than a dream. Professor Albert Jentzer, Dean of the Medical University of Geneva, Switzerland, and his group had actually incorporated the College in 1935. They had chosen Geneva because it stood, in those days, for the great principle of international amity and cooperation. Jentzer himself had assumed the responsibilities of president of the Founders' Committee and had appointed leaders in the surgical profession to inaugurate chapters of the College in various parts of the world. Dr. Dean Lewis of Johns Hopkins University undertook the task in this country and other illustrious men here and abroad began to add their names to the roster of the young College. Professor Arnold Jirasek, head of the Medical University of Prague, became the first International President of the institution.

. . . in December, 1937, the American Chapter of the International College of Surgeons came into being at a meeting in the building of the Academy of Medicine in New York with Dr. André Crotti as first president.



In Israel, with Prof. Bernhard Zondek

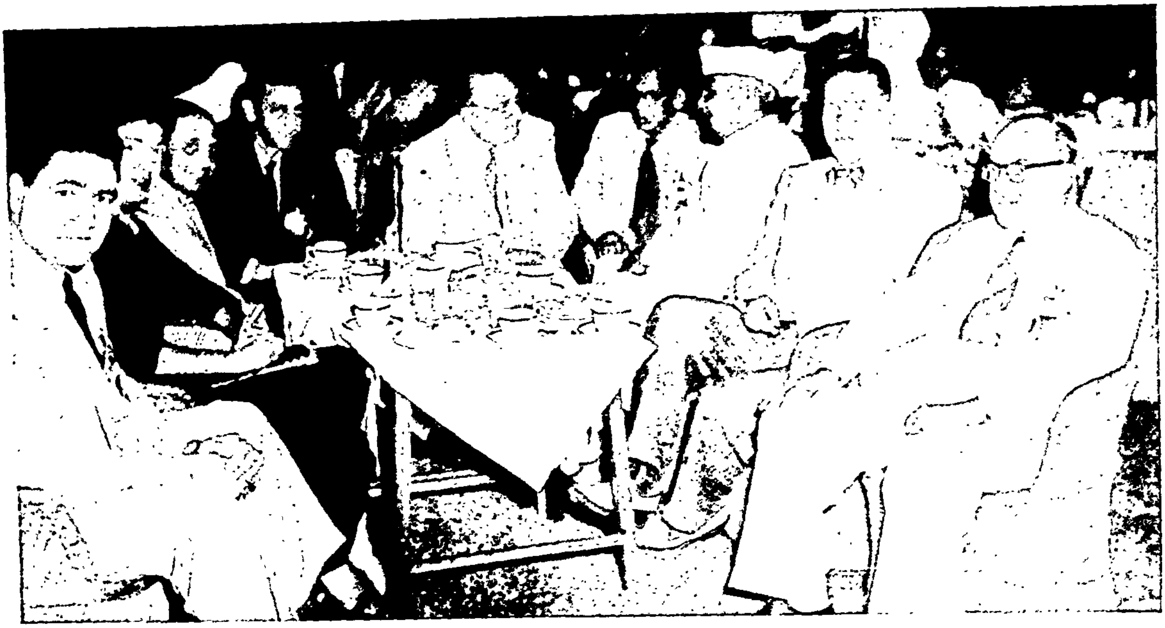
In Hong Kong, with Dr. Kenneth Hui and Dr. S. H. Lin



In Hong Kong, with Dr. Lin Shih-hsi and Dr. Y. P. Chan

With Dr. and Mme. Kurt Boshamer of Wuppertal-Barmen, Germany

With Prof. and Mme. Komei Nakayama of Chiba, Japan, admiring scrolls which depict the development of surgery in Japan



In Bombay, India, at a garden party given by Dr. A. V. Baliga

> To this fine and sincere man the debt of the International College of Surgeons is great indeed. It was he who chose for it its motto: "*Pro omni humanitate,*" and he who gave to it the perfect aphorism in which to express its highest ideals—the words of Louis Pasteur: "*La Science n'a pas de patrie, parce que le savoir est le patrimoine de l'humanité, le flambeau qui éclaire le monde.*
> . . . Crotti succeeded Jirasek as President of the International College of Surgeons . . . Men of many nations have helped to build this International College of Surgeons.

The following years were full of ferment. There were political rifts, soon to tear the world apart, which made international cooperation even among dedicated surgeons with broadest vision and warmest hearts suspect. There was personal vanity—the unforgivable sin in a scientist—fomenting intrigue, intransigence and obscurantism. But the *idea* of the International College of Surgeons only gathered strength through conflict.

The rest is history.

If the *idea* of the International College of Surgeons attracted the great surgical personalities who were its founders, the College as a *fact* retained their loyalty and drew into its circle the surgical leaders of every land in the face of the world. With all these leaders Dr. Thorek maintained, to the very last, ties of the most intimate friendship.

The International College Home, the International Secretariat, and the offices of the *Journal* and the *Bulletin* are located in Chicago, and as the International Surgeons' Hall of Fame and the School of History were founded, Dr. Thorek continued to give to each his personal guidance and supervision. They are the work of his hands, the loves of his soul.

These are some of the major deeds—omitting all the personal acts of help and kindness and whimsicality—of Max Thorek. What was it that he himself wanted? This is how he closes his book *A Surgeon's World:*

> . . . I trust and hope that the hand I would stretch in comfort and in courage to those who stand in the valley of the shadow of Death does not shake.

The answer to that prayer was a transcendent yea. In every relationship of his whole long life, he failed no human soul.

Above: in London, England, at a dinner of Fellows of the International College of Surgeons

At right: Dr. Edward L. Compere, a frequent caller at Dr. Thorek's office in the American Hospital, where of late most conferences concerning the College were held

Prof. Francisco E. Godoy Moreira of São Paulo, Brazil; his son, Dr. Roberto Godoy Moreira; Dr. Philip Thorek, and Dr. Max Thorek

Dr. Munawar Ali, of Karachi, Pakistan, seated between Dr. Philip Thorek and Dr. Max Thorek

Curriculum Vitae of Dr. Max Thorek

DR. MAX THOREK
Surgeon

Graduate of Rush Medical College and the University of Chicago, 1904; Professor of Surgery, Cook County Graduate School of Medicine; Formerly Attending Surgeon, Cook County Hospital; Founder and Surgeon-in-Chief, American Hospital, Chicago; Consulting Surgeon, Municipal Tuberculosis Sanitarium, Chicago; LL.D., Lincoln Memorial University; Officer of the Legion of Honor, France; Knight of the Crown of Italy; Commander of the Order of St. Alexander, Bulgaria; Medal of Honor of the Venezuelan Government; Distinguished Citizen's Medal of Veterans of Foreign Wars of the United States of America; Founder, International College of Surgeons; International Secretary General, International College of Surgeons; Editor-in-Chief, Journal of the International College of Surgeons; Fellow, Brazilian College of Surgeons; Corresponding Member, Société des Chirurgiens, Paris, France; Formerly Professor of Clinical Surgery, Loyola University; Member, Chicago Medical Society and Illinois State Medical Society; Fellow, American Medical Association; Fellow, Royal Academy of Medicine, Torino, Italy; Life Member, Rush Medical College Alumni; Corresponding Member, Société Scientifique Francaise de Chirurgie Réparatrice; Collaborator, The Rassegna Internazionale di Clinica Terapia, Milano, Italy; Honorary Member, Egyptian Medical Association, Cairo, Egypt; Corresponding Member, Sociedade das Sciences Medicas, Lisbon,

In Paris, France, Dr. Bernard Lafay saluting Dr. Thorek while Gen. Debénédetti adjusts the "cravate" bearing the insigne of Commander of the French Legion of Honor

Portugal; Fellow, National Academy of Medicine, Colombia, S. A.; Charter Member, Mississippi Valley Medical Society; Member, American Society French Legion of Honor; Academician of Surgical Academy of Mexico; Consulting Editor, Arquivos de Cirurgia Clinica e Experimental, São Paulo, Brazil; Honorary Member, Terre Haute Academy of Medicine; Hon. Fellow, International Society of Gastroenterology; Fellow, National Society of Gastroenterology; U. S. Delegate to International Congress Hepatic Insufficiency, Vichy, France, 1937; Fellow, International College of Anesthetists; Member, International Hospital Association; Member, International Anesthetic Research Society; Fellow, Peruvian Surgical Society; Guest Lecturer in Surgery, Washington University (1940); Life Fellow, International College of Surgeons; Life Member, Pi Gamma Mu; Member, Chicago Alumni Club; Member, Chicago Historical Society; Member, American Eugenics Society; D.Sc., Iowa Wesleyan College; Order of the Aztec Eagle, United States of Mexico; Order del Sol, Republic of Peru; Honorary Fellow, Belgian Society of Gastroenterologists; Honorary Member, Mario Donati Foundation; Honorary Fellow, Sociedad de Gineco-Obstetricia del Sureste, Yucatan, Mexico; Honorary Fellow, Surgical Society of Rome, Italy; Honorary Fellow, Piedmont Surgical Society; Honorary Member, Pan American Gastroenterology Review; Honorary Member, New York Academy of Science; Presidential Medal of Honor of the Government of Nicaragua; Honorary Fellow (Honoris Causa), Medical Society of Vienna, Austria; Fellow of the Royal Society of Medicine (England); Fellow (Honoris Causa), University of Buenos Aires, Argentina; Honorary Fellow of the Surgical Society, São Paulo, Brazil; Honorary Fellow, Surgical Society, University of Padua, Italy; Honorary Fellow of the National Academy of Sciences, Mexico; Phi Lambda Kappa Lectureship, Hahnemann Medical College, 1952; Gold Medallist, Phi Lambda Kappa, 1951; Honorary Fellow, Philippine College of Surgeons; Honorary Fellow, St. Lukes Medical Society, São Paulo, Brazil; Honorary Member, Society for Prevention of Cancer, Nordheim, Westphalen Düsseldorf; Honorary Fellow, Tusco-Umbrian Surgical Society, Florence, Italy; Academy of Templari, Bologna, Italy; Honorary Member, American Medical Society of Vienna; Order of Commander with Star, Ministry of Public Health, Spain; Founder, International Surgeons' Hall of Fame; Corresponding Member, Venezuelan Society of Surgeons; Cushing Lecturer, McGill University, Montreal, 1954; Corresponding Member, Medical Society of Parana, Brazil; Honorary Member, Japanese Surgical Association; Honorary Member, Chiba Medical Association (Japan); First Honorary Member, Golden Key Society, Medical University of Vienna; Grand Officer of the Order of Merit, Argentina; Member, American Medical Writers' Association; Doctor Honoris Causa, University of Istanbul, Turkey, Nov. 1954; Fellow, American College of Gastroenterology, July 1954; Commander of the National Order of the Southern Cross, Brazil, 1955; Decoration of Commander of the National Order of Merit "Carlos J. Finlay" by the Cuban Government; Commander, French Legion of Honor; Commander, Order of Merit of the Republic of Italy; Honorary Member, Cuban Society of the History of Medicine; Honorary Member, Turkish Society of Medical History; Honorary Member, American-Hungarian Medical Society; Recipient of Semmelweis Medal, 1958; Recipient of the Gold Cross of the Royal Order of the Phoenix bestowed by the King of the Hellenes, 1959.

Author: of "A Surgeon's World," "Creative Camera Art," and "Camera Art as a Means of Self-Expression"; "Surgical Errors and Safeguards," "Modern Surgical Technique" (4 volumes), "Plastic Surgery of the Breast and Anterior Abdominal Wall," English adaptation of "Krause's Surgery of the Brain and Spinal Cord" (3 volumes), "The Human Face in

Dr. Giacomo Profili, consul general of Italy in Chicago, assisted by Dr. Francis Lederer, presenting decoration of a commander of the Order of Merit to Dr. Max Thorek

Health and Disease." Has contributed Max Thorek Award for best surgical essay to Phi Lambda Kappa.

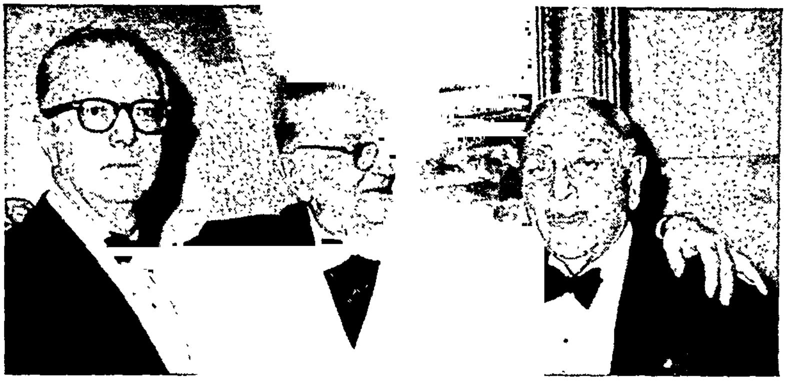
Other activities: Fellow, Royal Photographic Society of Great Britain; Fellow, Royal Society of Arts; Founder, Photographic Society of America; Hon. Pres., Fort Dearborn Camera Club; Past Pres., American Physicians Art Association; Hon. Member, Rochester International Salon of Photography, Associate Member, Wilmington International Salon of Photography and Member, Pittsburgh Salon of Photography; Honorary Member, Schenectady Camera Club; Honorary Member, International Mark Twain Society; De Paul University Art League; Music; Collector of paintings, autographs and old books.

Contributions to Medical Literature: Torsion of the Spermatic Cord with Undescended Testis, Simulating Strangulated Hernia, (Interstate Medical Journal, 1919); Primary Syphilis of the Female Breast Not Contracted During Lactation, (The Urologic and Cutaneous Review, 1921); Chilling and Postoperative Pneumonia, (The American Journal of Clinical Medicine, 1921); Unilateral Twin Tubal Pregnancy, (New York Medical Journal, 1921); Supernumerary Breast with Report of Case, (Japan M. World, 1921); Report of a Case of Amniotic Hernia, (Journal American Medical Association, 1921); A Plea for the Rubber Catheter, (Medical Record, 1921); A Clinical Study of One Thousand Cases of Scopolamine-Morphine Anaesthesia, (Illinois Medical Journal, 1921); Possibilities in the Reconstruction of the Human Form, (New York Medical Journal and Medical Record, 1922); Free Transplantation of Testicles from Ape to Man with Histologic Findings, (Am. Med., Burlington, Vt., 1922); Heterogeneous Testicular Grafting in Man, (Northwest Med., 1922); Successful Heterogeneous Testicular Transplantation in Man, (Virginia M. Monthly, 1922); Testicular Transplantation from Apes to Man with Histological Findings, (Kentucky Med. Journal, 1922); Surgical Instruments of Today, (The Modern Hospital, 1922); Fibrous Tumors of the Foot, (Annals of Surgery, 1922); The Present Position of Tissue Transplantation in Surgical Practice, (Endocrinology, 1922); Osteochondrome de l'Iléon, (Extrait de la Revue d'Orthopédie, 1923); Studies in the Technic of Testicular Transplantations, (Urol. & Cutan. Rev., St. Louis, 1923); Aluminum-Potassium Nitrate in the Treatment of Suppurative Conditions, Particularly Osteomyelitis, (Annals of Surgery, 1923); Acute Total Volvulus of the Stomach, (The Journal of the American Medical Association, 1923); Ueber eine Neue Methode der Hodenverpflanzung und Verwandte Probleme, (Wiener Medizinische Wochenschrift, 1923); Resumé of Results of Researches of the Functions of the Testes and Their Transplantation, (Paris Chirurgical, 1923); Congenital Pyloric Stenosis with Special Reference to Surgical Treatment, (Illinois Medical Journal, 1923); Experimental Investigation of the Rôle of Leydig, Seminiferous and Sertoli Cells, (Endocrinology, 1924); The Male Climacterium, Its Clinical Significance and Treatment, (Medical Journal and Record, 1924); Des Affinités Sanguines entre les Animaux et de leur Importance, (Revue Française d'Endocrinologie, 1924); Large Collection of Foreign Bodies in the Stomach, (International Clinics, 1924); Case of Ovarian Fibroid with Twice-twisted Pedicle, (Illinois Medical Journal, 1924); Case of Large Calculus Successfully Removed from Bladder, (Medical Review of Reviews, 1924); Davide Giordano, (Medical Life, 1924); The Influence of the X-ray on the Testicle, (Med. Rev. of Rev., N. Y., 1924); Studi Clinici e sperimentali sugli uno ed etero trapianti del Testicolo, (Policlin., Roma, 1924); Studies in the Technic and Clinical Application of Sex Gland Transplantation, (Mich. State Med. Soc. Journal, 1924); Technic and Clinical Application of Sex Gland Transplantation, (Journal Michigan Med. Soc., 1924); Edoardo Perroncito, (Medical Life, 1924); Torsion of the Spermatic Cord, Report of Two Cases, (Annals of Surgery, 1925); A New Method (Cultural) in the Treatment of Chronic Suppurations, Particularly of Bones, (International Clinics, 1925); Effective Treatment of Osteomyelitis by Aluminum-Potassium Nitrate, (Illinois Medical Journal, August, 1925); Tumors of the Fingers, with Report of Cases, (N. Y. Med. Journal, 1925); Congenital Atresia of Esophagus Associated with Atresia of Anus and Trachea and Esophageal Fistula, (Journal of American Medical Association, 1926); Ovarian Pregnancy with Histological Findings, (Illinois Medical Journal, 1926); Case of Ovarian Pregnancy with Histological Findings, (Illinois Medical Journal, 1926); Undici Casi di Carcinoma primitivo della cistifella, (Rassegna Internazionale Clinica, 1926); Compression Paralysis of the Long Thoracic Nerve Following an Abdominal Operation, Report of Case, (American Journal of Surgery, 1926); Rush Medical College, 1926, (N. Y. Medical Journal, 1926); Some Clinical Aspects of Human Sex Gland Maldevelopment and Its Possible Relief, (New York Medical Journal and Record, 1926); The Etiology, Prevention and Treatment of Postoperative Wound Infections, (Illinois Medical Journal, 1926); Extra-Uterine Pregnancy Developing to Term, (Clinical Medicine and Surgery, 1927); Camillo Golgi, Anatomist and Pathologist, (N. Y. Med. Journal, 1927); The Gonads and the Large Bowel in Dementia Praecox, (Clinical Medicine and Surgery, 1927); Torsion of the Fallopian Tube in a Virgin, (N. Y. Medical Journal, 1927); The Radial Treatment of Voluminous Herniae, (Clinical Medicine and Surgery, 1927); Advances in the Treatment of General Suppurations, Particularly Osteomyelitis, (Medical World, 1927); A Visit with Professor Davide Giordano of Venice, (Clinical Medicine and Surgery, 1928); Il Nuovo Metodo Biologico per curare i processi suppurativi cronici, (Rassegna Internazionale de Clinica e Terapia, 1928); Endocrine Gland Surgery, (Clinical Medicine and Surgery, 1928); Complete Double Uterus with Single Vagina, (Annals of Surgery, 1928); Clinical Manifestations of Endurance (Marathon) Dancing, (Illinois Medical

In Istanbul, Turkey, with visiting American surgeons. Dr. Max Thorek standing beside Prof. Dr. Fahri Arel, president of the Turkish Section

In Bangkok, Dr. Max Thorek presenting charter to Col. Nitya P. Vejjavisit, president of the Thailand Section

Journal, 1928); Clinical Aspects of Ovarian Transplantation with Report of Forty-four Cases, (Illinois Medical Journal, 1928); Duodenal Diverticula with Ulcer, (Illinois Medical Journal, 1929); Fallacies of the Steinach Operation; Experiences with Lanternization Procedure, (Illinois Medical Journal, 1929); Aesthetic Surgery of the Pendulous Breast, Abdomen and Arms in the Female, (Illinois State Medical Journal, 1930); Practicability of Ovarian (Auto-, Homo- and Hetro-) Transplantation, with Histologic Proof, (Endocrinology, 1930); Some Experiences with Spinal Anaesthesia, (New York Medical Journal and Record, 1930); The Occurrence of Voluminous Herniae and Their Management, (New York Medical Journal and Record, 1930); Thyroid Tumor Metastasizing to Lungs, (Journal of American Medical Association, 1931); Histological Verification of Efficacy of Free Transplantation of Nipple, (Med. Journal and Record, 1931); Primary Torsion of the Omentum with Report of a Case, (New York Medical Journal and Record, 1931); The Possibilities of Surgical Remodeling of the Human Form, (Tri-State Medical Journal, 1931); Can Benign Thyroid Tumors Metastasize? (American Journal of Surgery, 1932); Tubovalvular Gastrostomy, (Illinois Medical Journal, 1932); Anorchidism, (Journal of Urology, 1933); A New Operation (Cholecystoelectrocoagulectomy) for Gall Bladder Disease, (Illinois Medical Journal, 1933); Facts and Fallacies in Sex Gland Transplantation, (Tri-State M. J. 6: 1208-1216, Dec., 1933); Electrosurgery in Carcinoma of Rectum, (Arch. Phys. Therapy 15: 76-80, Feb., 1934); Lipoma Pseudomyxomatodes of Upper Extremity, Thorek, M., and Thorek, P., (Arch. Surg. 28: 1130-1135, June, 1934); Cancer Problems of General Surgery, (Arch. Phys. Therapy 14: 138-143, March, 1933); Cholecystoelectrocoagulectomy without Drainage, (Illinois M. J. 64: 425-439, Nov., 1933); Anorchidism (absence of testicle) with Case Report, Thorek, M., and Thorek, P., (J. Urol. 30: 345-351, Sept., 1933); Electrosurgical Obliteration of Gallbladder, 75 consecutive unselected cases without mortality, (J.A.M.A. 103: 169-174, July 21, 1934); Electrosurgery in Treatment of Carcinoma of Rectum, (M. Rec. 140: 173-177, Aug. 15, 1934); Une Nouvelle Méthode pour l'obliteration de la vesicule biliare par l'electro-chirurgie. Advantages of Electrosurgical Obliteration of Gallbladder over Classical Cholecystectomy, (Internat. J. Med. & Surg. 98:106, March 1935); Electrosurgical Obliteration of Gallbladder, (Arch. Phys. Therapy 16: 207-218, April, 1935); Modern Trends in Surgery, (J. Oklahoma M. A. 28: 321-327, Sept., 1935); Instruments to Facilitate Maneuvers in Gallbladder Surgery, (Am. J. Surg. 30: 389, Nov., 1935); Uses of Falciform Ligament in Surgery of Upper Abdomen, (Am. J. Surg. 31: 467-470, Mar., 1936); Une Nouvelle Methode pour l'obliteration de la vésicule biliaire par l'electro-chirurgie; un Rapport sur cent cas consecutifs non choisis, opérés par cette Methode, aucum décès, (Cir. y Cirujanos 3: 171-182, Sept.-Oct., 1935); Sopra Alcun Fattori Dell Mortalita Dopo la Colecistectomia, Studio Sperimentale e Clinico, (Riv. di Chir. 2: 1-18, Jan., 1936); Simplicity versus Complicated Methods in Reconstruction of Pendulous Breasts, (Illinois M. J. 69: 338-345, April, 1936); Electrosurgical Obliteration of Gallbladder without Drainage as Means of Reducing Mortality, Report of 201 Consecutive Unselected Cases, (Am. J. Surg. 32: 417-434, June, 1936) ; Rationale of Electrosurgical Obliteration of Gallbladder, Clinical study of 213 consecutive unselected cases without mortality, (Pennsylvania M. J. 39: 759-765, July, 1936) ; Gastrostomia Tubovalvolare, (Rassegna Internaz. di clin. e terap. 17: 819-834, Sept., 1936) ; Relation of Surgeon to Hospital, (Hospitals 10: 54-56, Oct., 1936) ; Improved Oblique Anterior Gastroenterostomy, (M. Rec. 144: 412-413, Nov. 4, 1936) ; Further Experiences with Electrosurgical Obliteration of Gallbladder, (Arch. Phys. Therap. 18: 278-280, May, 1937) ; Gastrostomia Tubovalvular, (Cir. y. Cirujanos 5: 267-282, May-June, 1937) ; Priority for "Exteriorization Operation" for Carcinoma of Bowel, (Ann. Surg. 106: 145-146, July, 1937) ; Electrosurgical Obliteration of Gallbladder without Drainage as Means of Reducing Mortality, Report of 342 cases, (Radiol. Rev. & Mississippi Valley M. J. 59: 162-172, Sept., 1937) ; Sul Metodo Spivack di Gastrostomia, (Rassegna Internaz. di clin. e terap. 18: 1048-1049, Dec. 15, 1937) ; Electrosurgical Obliteration of Gallbladder without Drainage, Report of 342 cases, (Lancet 1: 15-20, Jan. 1, 1938) ; Electrosurgical Obliteration of Gallbladder without Drainage, Report of 471 cases, (Tr. Internat. Coll. Surgeons 1: 173-182, Oct., 1938) ; Plastic Reconstruction of Female Breasts and Abdomen, (Am. J. Surg. 43: 269-278, Feb., 1939) ; Evolution and Perfection of Gastrostomy, (Arch. Ital. di Chir. 53: 737-745, 1938) ; Electrosurgical Obliteration of Gallbladder without Drainage. Report of results of 980 cases with mortality of 0.3 per cent, (Ill. M. J. 78: 211-228, Sept., 1940) ; La historia y Evolucion de la Gastrostomia, (Cir. y. Cirujanos 8: 127-137, Mar. 31, 1940) ; Oclusion Mesenterica Aguda; Apoplejia Intestinal Por Shock de Intolerancia, (Rev. de cir. de Buenos Aires 20: 47-54, Feb., 1941) ; El tratamiento con eter de colelitos enclavados, (Cir. y. Cirujanos 11: 563-576, Oct. 31, 1943) ; History and Development of Gastrostomy, (J. Internat. Coll. Surgeons 6: 295-300, July-Aug., 1943) ; Max Neuburger, Historian, at Seventy-five, (M. Rec. 156: 734-735, Dec., 1943) ; Surgeons and Events; Guillaume Dupuytren (1770-1835), (J. Internat. Coll. Surgeons 7: 353, Sept.-Oct., 1944) ; Surgeons and Events; Joseph-Ignace Guillotin (1738-1814), (J. Internat. Coll. Surgeons 7: 285, July-Aug., 1944) ; Surgeons and Events: Larrey, Dominique-Jean (Baron) (1766-1842), (J. Internat. Coll. Surgeons 7: 191, May-June, 1944) ; Surgeons and Events; Sergel S. Yudin, (J. Internat. Coll. Surgeons 7: 446, Nov.-Dec., 1944) ; Gastrostomy; History of Its Development, Indications and Contraindications, (Rev. Gastroenterol. 12: 347-352, Sept.-Oct., 1945) ; Sir Morell Mackenzie, 1835-1892, (J. Internat. Coll. Surgeons 8: 555-558, Nov.-Dec., 1945) ; Surgeons and Events; Sir Benjamin Collins Brodie (1783-1862), (J. Internat. Coll. Surgeons 8: 33, Jan.-Feb., 1945) ; Tubovalvular Gastrostomy; History and Technique (determining credit for origination in surgery), (J. Michigan M. Soc. 44: 153-164, Feb., 1945) ; Twenty-five Years' Experience with Plastic Reconstruction of Breast and Transplantation of Nipple, (Am. J. Surg. 67: 445-466, Mar., 1945) ; Plastic Reconstruction of Breast and Free Transplantation of Nipple (author's one-stage operation, microscopic proof of survival of transplanted nipple), (J. Internat. Coll. Surgeons 9: 194-224, March-April, 1946) ; Retropharyngeal Abscess in Adults, review of literature and report of case. M. Thorek and M. M. Schapiro, (J. Internat. Coll. Surgeons 9: 671-678, Nov.-Dec., 1946) ; Surgical Plagiarism, Its Etiology, Manifestations, Prophylaxis and Cure, (J.



At a meeting of the American-Hungarian Medical Association, Dr. Max Thorek with Dr. Alexander Borota and Prof. Bela Schick, Dr. Thorek and Prof. Schick both being recipients of the Association's Semmelweis Award

Internat. Coll. Surgeons 9: 570-578, Sept.-Oct., 1946) ; Partial Hepatectomy in Carcinoma of Gallbladder, with case report, (J. Internat. Coll. Surgeons 10: 369-377, July-Aug., 1947) ; Surgical Aspects of Cholecystitis, (Rev. Gastroenterol. 14: 236-239, Apr., 1947) ; Early Successful Gastrointestinal Surgery, 2 interesting cases, (Rev. Gastroenterol. 15: 766-769, Oct., 1948) ; Impending Death under Anesthesia, (J. Michigan M. Soc. 49: 555-559, May, 1950) ; Lumbar Hernia, (J. Internat. Coll. Surgeons 14: 367-393, Oct., 1950) ; Foreign Bodies in Hepatic Ducts, review of literature, (J. Internat. Coll. Surgeons 15: 624-627, May, 1951) ; Impending Death under Anesthesia, (J. Internat. Coll. Surgeons 15: 152-160, Feb., 1951) ; The International College of Surgeons: A Teaching Institution, (J. Internat. Coll. Surgeons 16: 659, Nov., 1951) ; La Mort menaçante au cours de l'anesthésie, (Mem. Acad. Chir. 77: 73-77, Jan. 10-24, 1951) ; A Pioneer Passes, (J. Internat. Coll. Surgeons 16: 681-683, Dec., 1951) ; Portrait of a Gentleman: In Memory of Herbert Acuff, (J. Internat. Coll. Surgeons 16: 543-545, Nov., 1951) ; Deux Cas de hernie lombaire (Two Cases of Lumbar Hernia), (Mem. Acad. Chir., Paris 78: 255-257, Feb. 27, 1952) ; Living to Learn, (J. Internat. Coll. Surgeons 18: 389-390, Sept., 1952) ; A Long Step Forward, (J. Internat. Coll. Surgeons 18: 390-391, Sept., 1952) ; Man of Destiny, (J. Internat. Coll. Surgeons 17: 246-247, Feb., 1952) ; numerous articles and editorials in the Journal and the Bulletin of the International College of Surgeons up to and including issue of February 1960.

In 1954, at Dow Medical College in Karachi, Pakistan

ANNOUNCEMENT

Prior to the lamentable death of Dr. Max Thorek, Founder and International Secretary General of the International College of Surgeons, he appointed a committee, consisting of Dr. Henry W. Meyerding, Chairman, Dr. Horace E. Turner, Dr. Francis L. Lederer, Dr. Edward L. Compere and Dr. Louis Plzak, to undertake the task of finding the person to fill the position of Executive Director of the International College of Surgeons.

This committee has met on two different occasions to consider those persons whose names were submitted for consideration but, as of this writing, no selection has been made. The committee has a number of others to consider but, during the interim, has requested Dr. Horace E. Turner to act as International Secretary General, pro-tem, for the College.

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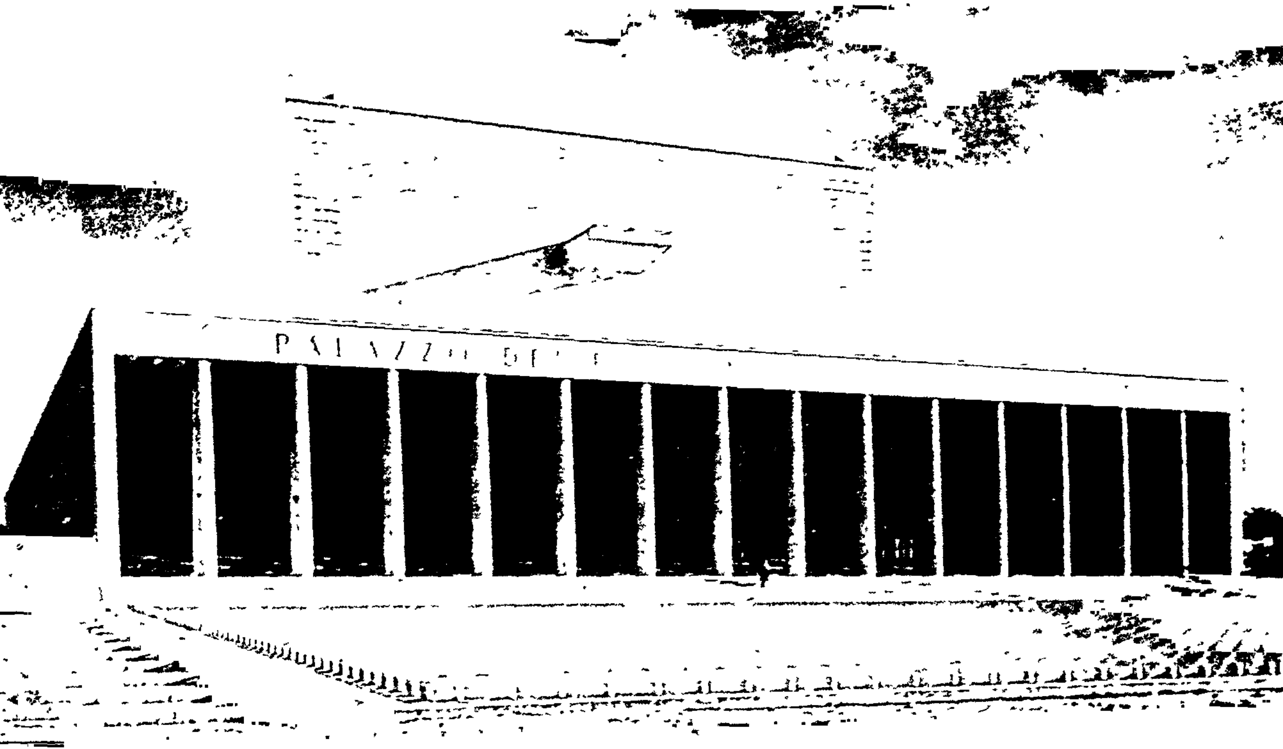

Palazzo dei Congressi—Esposizione Universale di Roma (E.U.R.), Viale Cristoforo Colombo, Rome
Congress Meeting Place

Twelfth Biennial International Congress

INTERNATIONAL COLLEGE OF SURGEONS

May 15-18, 1960 Rome, Italy

May is the most delightful month of the year in Italy. On May 15-18, 1960, the Twelfth Biennial Surgical Congress of the International Congress of Surgeons will be held in Rome, under the sponsorship of the University of Rome, its faculty and the Italian government.

The Congress will have the active participation of **Dr. Henry W. Meyerding** of Rochester, Minnesota, president of the International College of Surgeons, and of **Prof. A. Mario Dogliotti** of Turin, president-elect of the College.

Prof. Pietro Valdoni, professor of surgical pathology at the University of Rome and president of the Italian Section of the College, will serve as president of the Congress. He, **Prof. Giuseppe Bendandi**, secretary of the Italian Section and secretary general of the Congress, and **Prof. Carlo Marino Zuco**, with the help of surgeons from many other countries, have evolved a thoroughgoing and intensely attractive surgical program.

Surgeons in good standing from all the countries of the world are invited to the Congress, without regard to whether or not they are Fellows of the International College of Surgeons.

They also are invited to join the clinical tours which will precede and follow the Congress.

Orthopedics and Traumatology

The orthopedic subject for the General Assembly is *Arthrosis of the Hip, with Particular Emphasis upon the Indications for, and Results of, Various Types of Operations—Including Arthroplasty, Osteotomy and Arthrodesis.* Prof. Carlo Marino Zuco will serve as moderator.

Dr. Edward L. Compere of Chicago, president of the United States Section of the International College of Surgeons, will preside over the symposium on sports injuries.

All surgeons interested in orthopedics or traumatology who plan to attend the Rome Congress are urged so to arrange their itinerary as to be able to attend a meeting of the French Section of the College in Paris, May 9-10. **Prof. Raymond Darget** of Bordeaux, secretary of the French Section, is arranging an excellent program including considerable orthopedics.

Following the Paris meeting, the orthopedic surgeons are cordially and earnestly invited to a clinical meeting on orthopedics in Munich, Germany, May 12-13. **Dr. Max Lange** is organizing this two-day meeting, which will include demonstration of operations and presentation of patients, in his magnificent new orthopedic hospital. This hospital has been heralded all over the world for its completeness and modernity.

Rehabilitation Program

A special invitation is being extended to all who are interested in physical medicine and rehabilitation to attend the Congress.

A symposium, dealing with *Surgical Possibilities in Rehabilitation,* which had been planned by Ross T. McIntire, will take place as scheduled and will be a memorable occasion. Dr. McIntire's friends and associates are making every effort to make it a worthy memorial to this distinguished pioneering exponent of rehabilitation.

The two meetings, in Paris and in Munich, cannot help but be of inestimable interest to those engaged in any phase of rehabilitation. In particular, Dr. Lange's hospital is considered a rehabilitation center second to none and with an enviable hydrotherapy department. It does seem worth seeing, and Dr. Lange's work is undisputably worth knowing.

Colon and Rectal Surgery

The symposium on colon and rectal surgery at the Rome Congress will be under the chairmanship of **Dr. Harry E. Bacon** of Philadelphia, who has enlisted the participation of eminent surgeons in the field of that specialty, and an extraordinarily fine session is anticipated.

Correlated with the symposium to be held in Rome, the Section of Colon and Rectal Surgery of the International College of Surgeons will hold a meeting May 20-21, in Bologna, Italy, under the direction of **Prof. G. Gherardo Forni,** rector, professor emeritus of surgery, and former dean of the Medical School of the University of Bologna. Further information concerning both these meetings can be obtained from **Dr. James P. Fleming,** 125 Meigs Street, Rochester, New York, secretary of the Section.

Surgical Conference in Israel

After the Rome Congress, surgeons of all specialties and general surgery who are interested in visiting Israel will have an opportunity to participate in a Post-Congress International Conference of Surgeons in Tel Aviv and Jerusalem, May 21-23. A tour of Israel's hospitals and medical services, as well as other institutions, has been arranged.

For details on any of these meetings, write to the Secretariat of the International College of Surgeons, 1516 Lake Shore Drive, Chicago, Illinois. For travel arrangements write direct to the International Travel Service, Inc., 119 South State Street, Chicago, Illinois.

In Memoriam

ARTHUR RAY BEYER

M.D., F.I.C.S.

1880-1959

Arthur Ray Beyer, M.D., F.I.C.S., of Tampa, Florida, passed away on Sunday afternoon, September 27, 1959.

Doctor Beyer was one of the oldest members of the Hillsborough County Medical Association. While the new generations of the healing arts will bring with them physicians who will be well fitted to meet the emergencies that arrive, they will not be called upon for those versatilities that set our late comrade apart from the younger generation of our profession when he began the practice of medicine.

Doctor Beyer, son of Mr. and Mrs. Thomas Beyer, was born June 23, 1880, in Syracuse, New York. He spent most of his youth in Winter Park, Florida, and was graduated from Rollins College and the Louisville Medical School in Louisville, Kentucky. He began his practice in Tampa in 1907. Doctor Beyer opened his office in the Citizens Building in 1913, before the building was completed.

Doctor Beyer served on the staff of the Tampa General Hospital, St. Joseph's Hospital, Clara Frye Hospital and Centro Asturiano Hospital.

He was a member of the American, Florida and Hillsborough County Medical Associations, the Association of Seaboard Air Line Railroad Surgeons, the American Association of Railway Surgeons, and the International College of Surgeons.

Arthur Ray Beyer
M.D., F.I.C.S.

Dr. Beyer was in failing health since October of 1958. He closed his office on July 31, 1959.

He is survived by his widow, Mrs. Eleanor M. Beyer, a daughter, Mrs. Margaret Alberta Kirkland, and a sister, Mrs. Emily E. Bonfield, all residing in Tampa.

The officers and members of the Board of Governors of the International College of Surgeons wish to extend their sympathy to Mrs. Beyer and her family.

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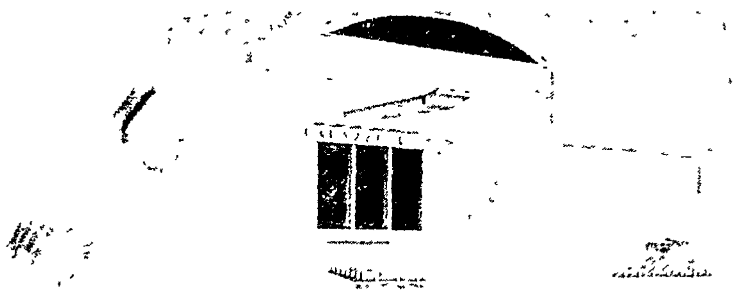
ROME, ITALY **MAY 15-18, 1960**



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The Journal of the International College of Surgeons

FOUNDED IN GENEVA, SWITZERLAND, 1935 - INCORPORATED IN WASHINGTON, D. C., 1940

Vol. 33 MARCH, 1960 No. 3

General Surgery

Acute Hemorrhagic Pancreatitis: Experimental Surgical Procedures Applied to Alter the Course of the Disease

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AUGUSTO PORTILLO, M.D.,[**] AND WILFRIDO CANTU, M.D.[†]
CHICAGO, ILLINOIS

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From the Surgical Section (Experimental) of St. Elizabeth's Hospital, Chicago.

This project was made possible by a grant-in-aid from [illegible] Chicago.

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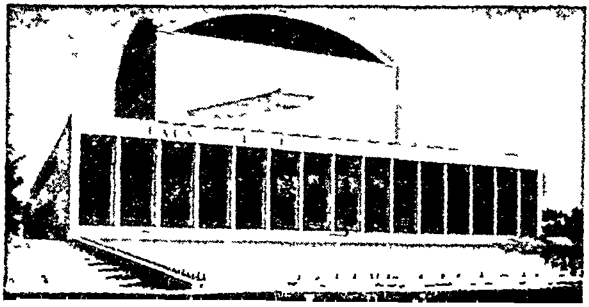

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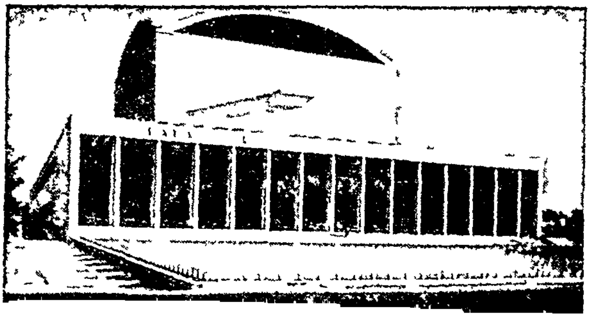

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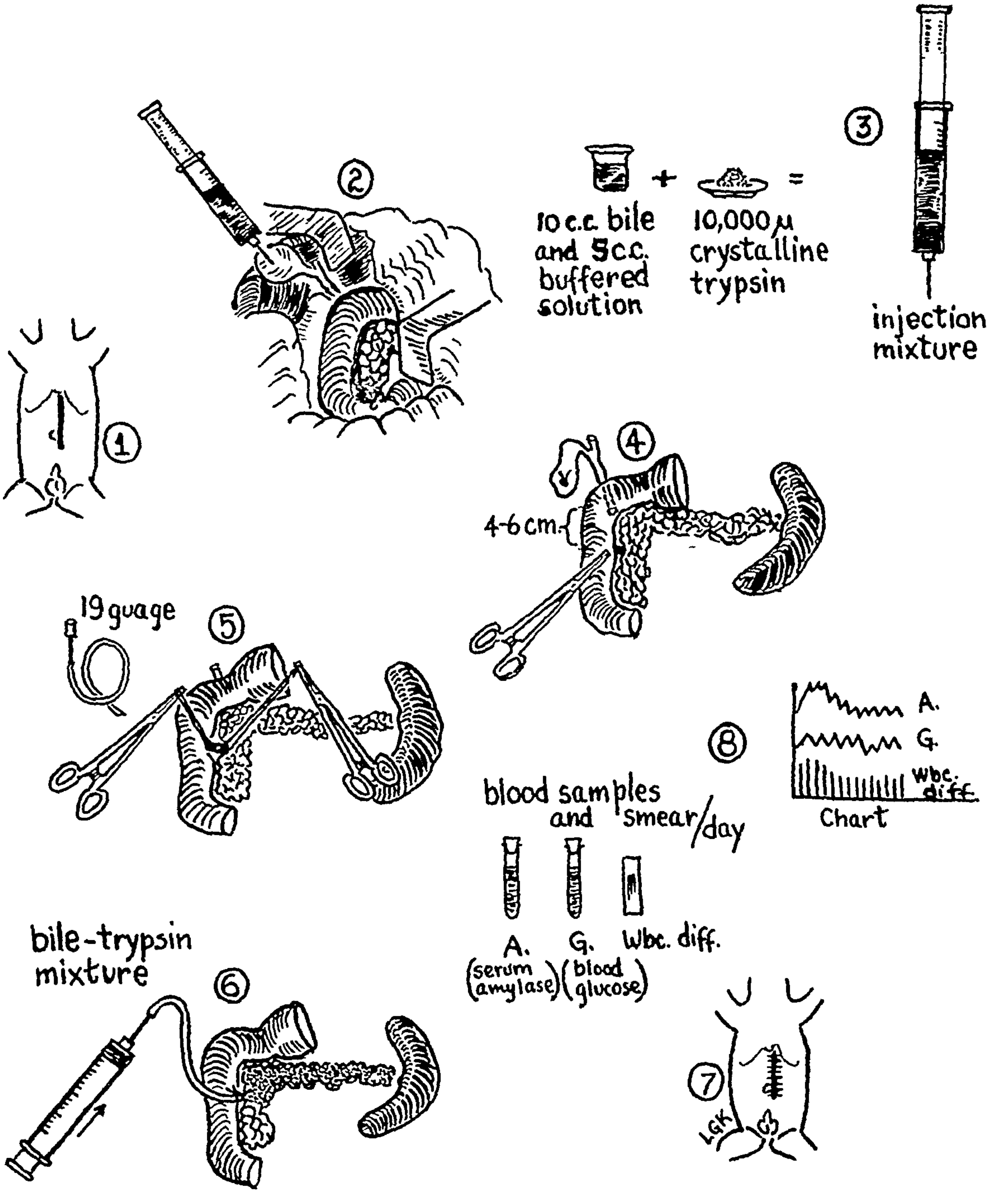

Fig. 1.—A method of producing acute hemorrhagic pancreatitis in the experimental laboratory animal (dog). *1*, midline laparotomy incision; *2*, aspiration of 10 cc. of bile from gallbladder; *3*, bile mixed with crystalline trypsin (10,000 units); *4*, "accessory" larger pancreatic duct identified; *5*, duct mobilized and polythene catheter inserted into lumen, toward body of pancreas; *6*, bile-trypsin buffered mixture injected into pancreatic duct system; *7*, abdominal incision closed by suture; *8*, data prior to and subsequent to operative procedure (blood samples obtained for serum amylase and blood sugar levels and white blood cell (Schilling) differential count).

scending branch of the left coronary artery,[3] and the establishment of arterial hypertension in the dog by clamp application to renal artery.[4] Laboratory animals afflicted with these processes have served as subjects for the application and evaluation of different therapeutic measures. It is the purpose of this report to describe (a) a method that consistently reproduces acute hemorrhagic pancreatitis in the dog; (b) the gross and microscopic changes that occur subsequent to the reproduction, and (c) the results of certain surgical procedures applied in an effort to influence the degree, extent and duration of this acute inflammatory process.

A method of producing acute hemorrhagic pancreatitis in the dog is described; no originality is claimed as to its mode of application. The method has merit in that it embodies the predominant concept of the pathogenesis of acute hemorrhagic pancreatitis; it consistently produces the same lesions each time it is applied, and it has inherent simplicity. This simplicity has led the authors to the opinion that it could serve as an experimental tool for investigators, as well as a teaching exercise for surgical resident trainees. It is suggested that the multiple and varied experimental procedures previously reported may have had a tendency to confuse and delay a long-needed concrete effort to find a definitive therapeutic approach to this disease in man.

A method which would embody an acceptable concept[5] of the pathogenesis of acute hemorrhagic pancreatitis, which could produce this acute process in an experimental animal with predictable results and which could be duplicated by other investigators would make possible a concerted application of medical and surgical procedures to alleviate this disease. During the period from 1900 to 1959, thirty-nine different experimental procedures (see *Addenda*, Note 1) have been described which reportedly produce pancreatitis in a variety of animals, exclusive of three earlier methods (Bernard,[6] 1856; Hlava,[7] 1890, and Hildebrand,[8] 1895). No single procedure has been universally adopted for the experimental production of this disease. In an acceptable approach, the procedure should cause rapidly developing hemorrhagic necrosis of the pancreas in the presence of complete ductal obstruction, enabling the exocrine outflow to be diffused into the parenchymal tissue by means of the mechanical rupture of the smaller ducts. The proposed technic attempts to mimic this sequence of events, and uses the mortality rate (approaching L.D.50) as the end point. In this manner, any agency the would influence the mortality rate in the direction of survival would indicate a significant therapeutic advance.

Four factors are considered necessary to produce this acute inflammatory process and are influenced, in part, by the structural configuration of the canine pancreatic duct system. These factors are bile, trypsin, an alkaline medium of optimum pH, and ductile rupture. The addition of trypsin to bile markedly increases the severity of the inflammation by directly activating the intrapancreatic ferments; the intraductal (pancreatic) injection of bile, alone, often leads solely to edema, unless large quantities are used to effect ductile rupture. A buffered phosphate solution (*Addenda*, Note 3) may be used as a carrier to maintain an optimum *p*H (7.1) for the action of the enzyme, trypsin.[9] Rupture of the ducts is brought about by controlling the volume

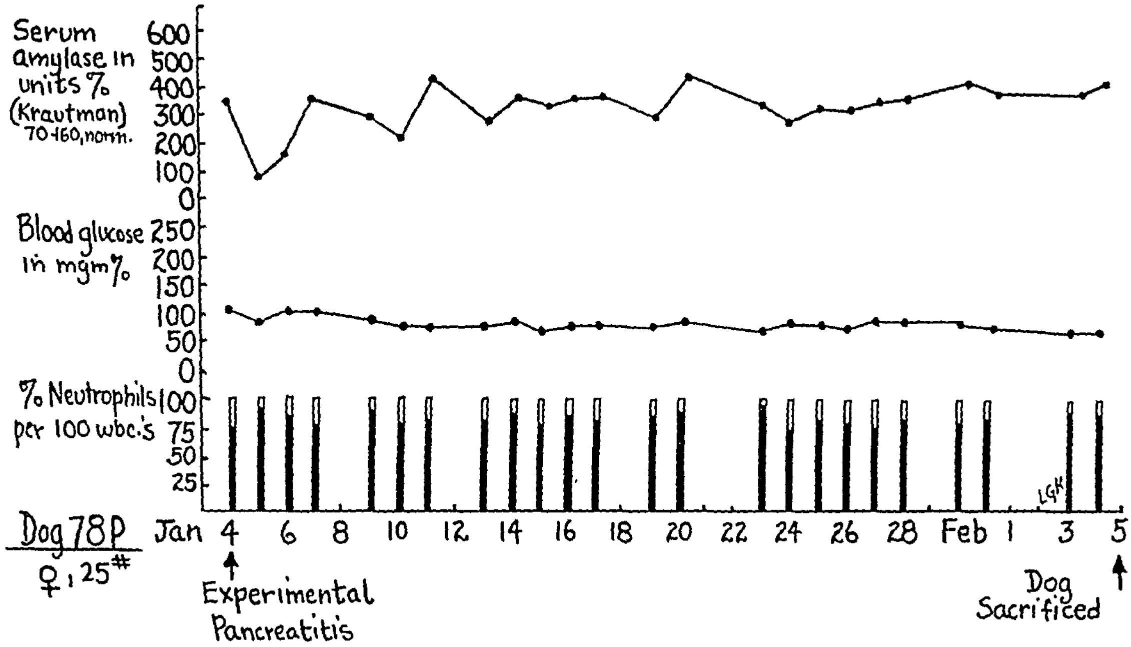

Fig. 2.—Experimental pancreatitis (described procedure). Chart of dog which survived for thirty days; serum amylase level and the leukocyte differential count *(Schilling) indicate several phases of* resolution and reexacerbation of acute inflammatory process.

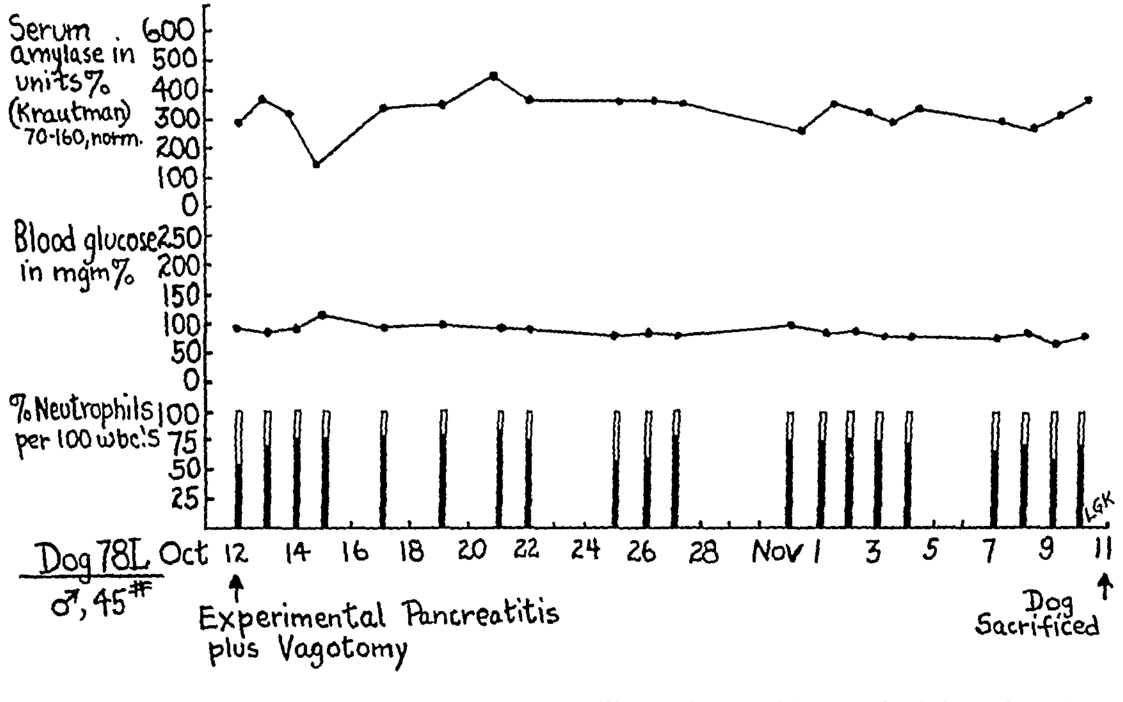

Fig. 3.—Experimental pancreatitis plus vagisection. Chart of dog which survived for thirty days. Late increase in serum amylase values (nine days after initiation of acute process) and moderate *polymorphonuclearcytosis suggest period of additional pancreatic inflammation and necrosis.*

of injected solution and the force used in the injection. The grossly visual diffusion of the bile-trypsin solution within the pancreatic parenchyma confirms the presence of ductile rupture and obviates the use of direct pressure measurements. Morphologically, the canine pancreas has long transverse and vertical limbs, which lie within the convexity formed by the stomach and the freely mobile duodenum. There are two duct systems within the pancreas: a smaller "main" duct, which drains the transverse limb into a common ampulla with the ductus choledochus; and a larger "accessory" duct, which drains the vertical limb and commonly a portion of the transverse limb. Within the body of the pancreas these two duct systems have communications. The smaller "main" duct may be nondemonstrable in 50 per cent of instances;[11] in addition, owing to its size, it cannot serve as a consistent decompression outlet, should the larger duct be injected with an irritant solution or be ligated. The larger "accessory" duct empties by a single outlet into the duodenum, 4 to 6 cm. distal to the bile duct ampulla.

The method used to produce acute hemorrhagic pancreatitis in the dog was as follows: The animal was anesthetized with morphine sulfate (subcutaneously, 3 mg. per kilogram of body weight) and nembutal (intraperitoneally, 30 mg. per kilogram). (Each dog weighed 12 to 20 Kg. or more; in dogs of lesser weight the pancreatic duct was observed to be too small for easy identification, and the ease of duct location is important, as surgical trauma due to excessive dis-

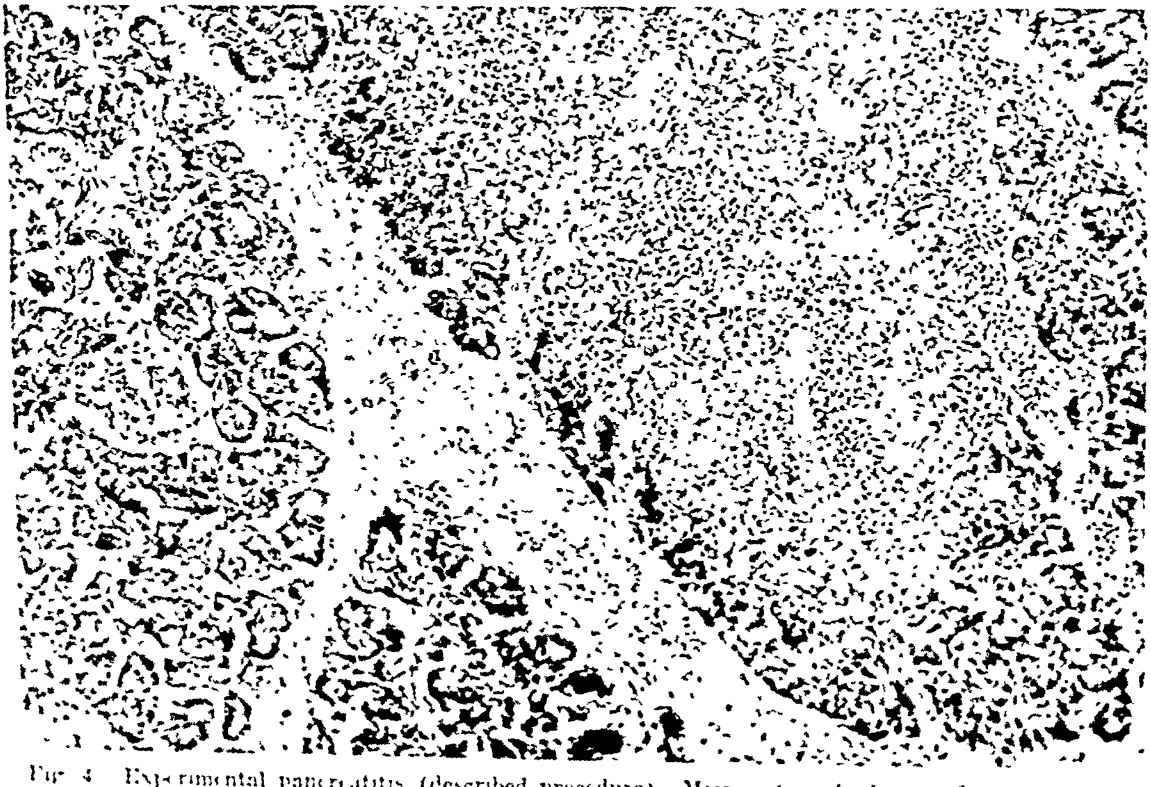

Fig. 4. Experimental pancreatitis (described procedure). Microsection discloses inflammatory exudate replacing acinar tissue; intact acini at periphery of lobule indicate central-ductile origin of disease process produced by artificial mechanical rupture of pancreatic duct system. × 120

section can produce local pancreatitis). Under sterile operating room technic a midline abdominal incision was made to expose the internal organs (Fig. 1). Ten cc. of bile was withdrawn from the gallbladder; a single suture closed the puncture hole in this organ. The bile was mixed with 10,000 units of crystalline trypsin (Armour's Tryptar)® (*Addenda,* Note 2) and 5 cc. of a buffered phosphate solution (*Addenda,* Note 3) in a sterile container. The larger ("accessory") pancreatic duct was carefully mobilized just external to the duodenum, in the cleft between the pancreas and the descending duodenal loop. A polyethylene catheter was threaded into the cephalic portion of the pancreatic duct, and the bile-trypsin mixture (total volume, 15 cc.) was injected by means of a syringe under moderate pressure. The catheter was removed and the duct ligated. Within a few minutes the pancreas turned nutmeg brown, and within thirty minutes a parenchymal hemorrhagic reaction could be noted. Additional surgical procedures were performed *(vide infra)* as the situation dictated. The operation was terminated by suture closure of the incision. All dogs were given routine pen care and a standard diet (horse meat and kibbled meal). Antibiotics were not used. Prior to the surgical procedure and subsequently, at almost daily intervals, tests for serum amylase (*Addenda,* Note 4), blood sugar (*Addenda,* Note 5) and a white blood cell differential (Schilling) count were made to gauge the severity of the reaction and to correlate the laboratory data with the clinical course of the disease (Figs. 2 and 3). The animals that survived were permitted to live for thirty days, after which

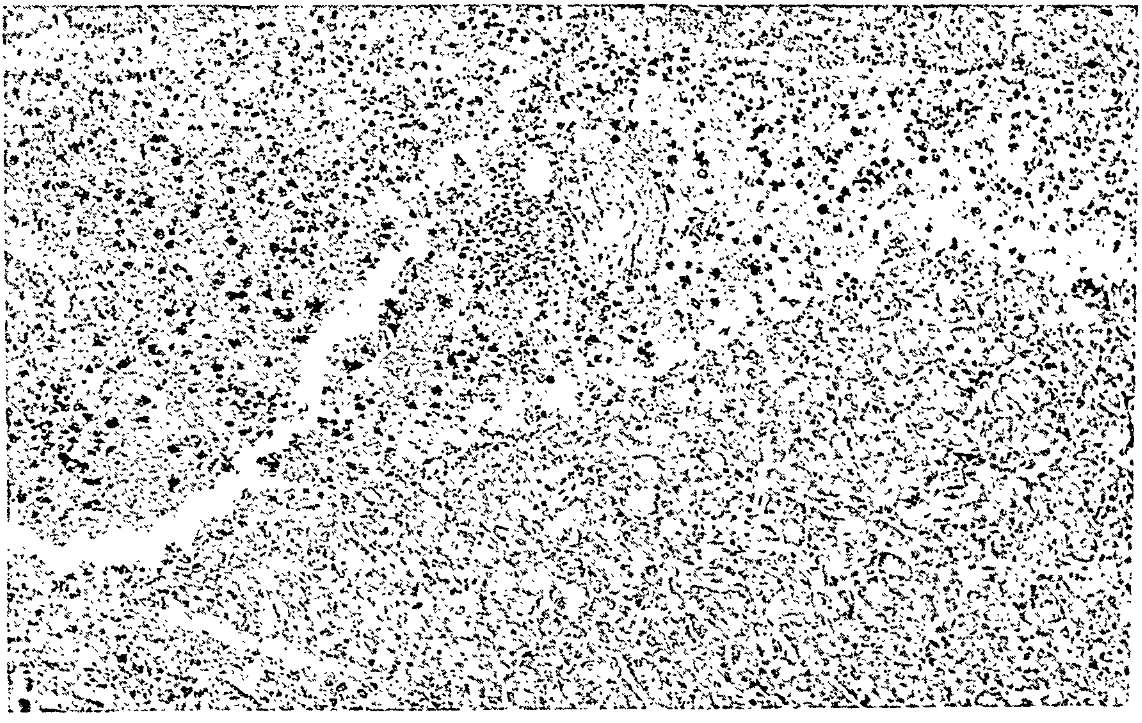

Fig. 5.—Experimental pancreatitis (described procedure). Microsection discloses interlobular pancreatic spaces filled with hemorrhagic exudate containing some pigment from hemolysed erythrocytes. × 150.

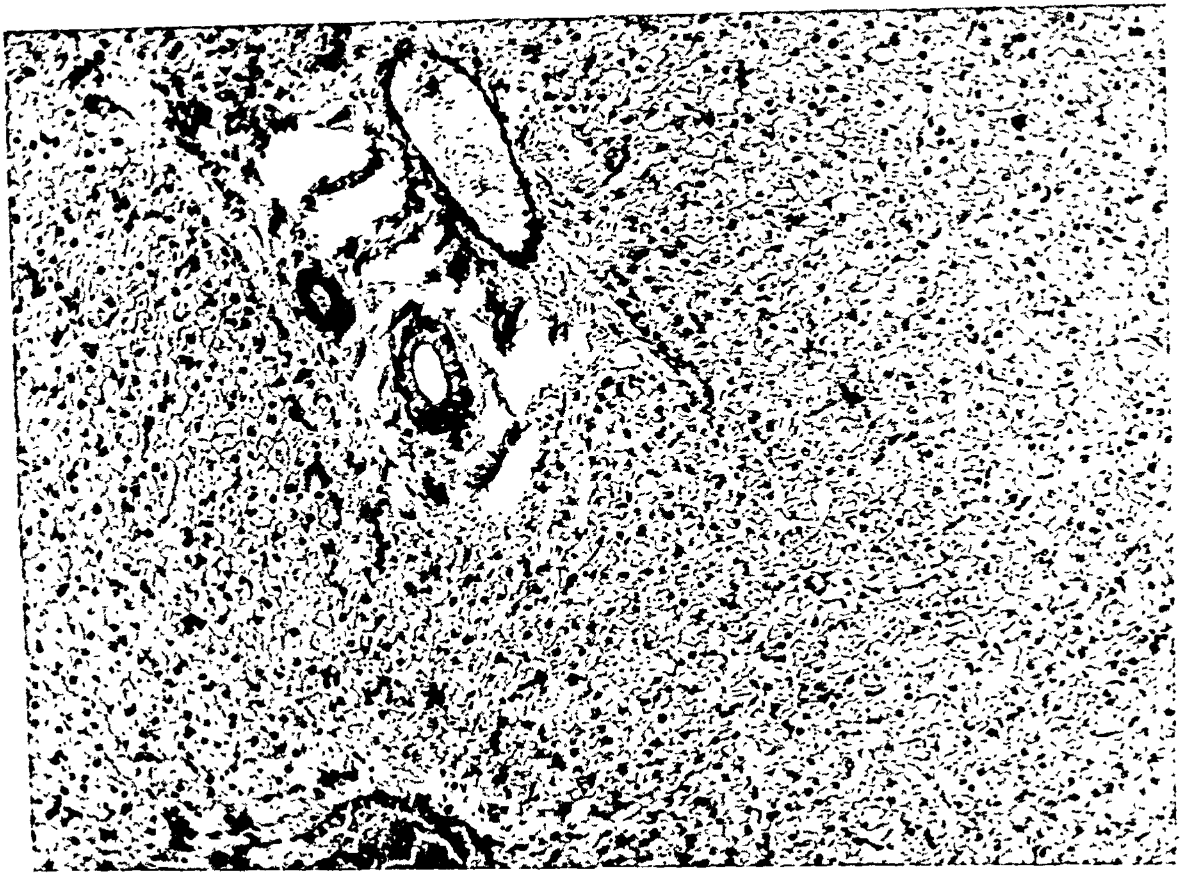

Fig. 6.—Experimental pancreatitis (described procedure). Animal that survived thirty days after initiation of acute inflammatory process; microsection of hepatic cells discloses diffuse vacuolization; portal triad structures appear at top of figure. × 150.

time they were killed. Autopsies were performed on all animals; the gross observations were noted, and microscopic sections were made of the pancreatic, hepatic, renal, splenic, and omental tissues (Figs. 4, 5, 6, 7, 8 and 9).

Forty-seven surgical procedures were performed in an effort to study and to modify the toxic and lethal effects of acute pancreatitis in the dog. It was considered that reduction of the pancreatic enzyme (especially trypsin and lipase) output, local neutralization of the pancreatic enzymes, external drainage of the enzyme output or removal of the source of these enzymes would favorably influence the course of this inflammatory process. Toward this end, division of the vagus nerve at the time of induction of pancreatitis, division of the vagus nerve thirty days prior to the induction of pancreatitis, external drainage of the pancreatic duct and resection of the inflamed portion of the pancreas were the therapeutic procedures applied. Vagisection thirty days prior to the formation of the acute pancreatic inflammation was performed in an effort to provide a pancreas with an initial low enzyme output. All divisions of the vagus nerve were subdiaphragmatic. Ductal drainage was effected by exteriorizing that portion of the pancreas which contained the larger "accessory" duct and thus provide the pancreatic secretions an external egress via an intraductal polyethylene catheter. Pancreatic resection

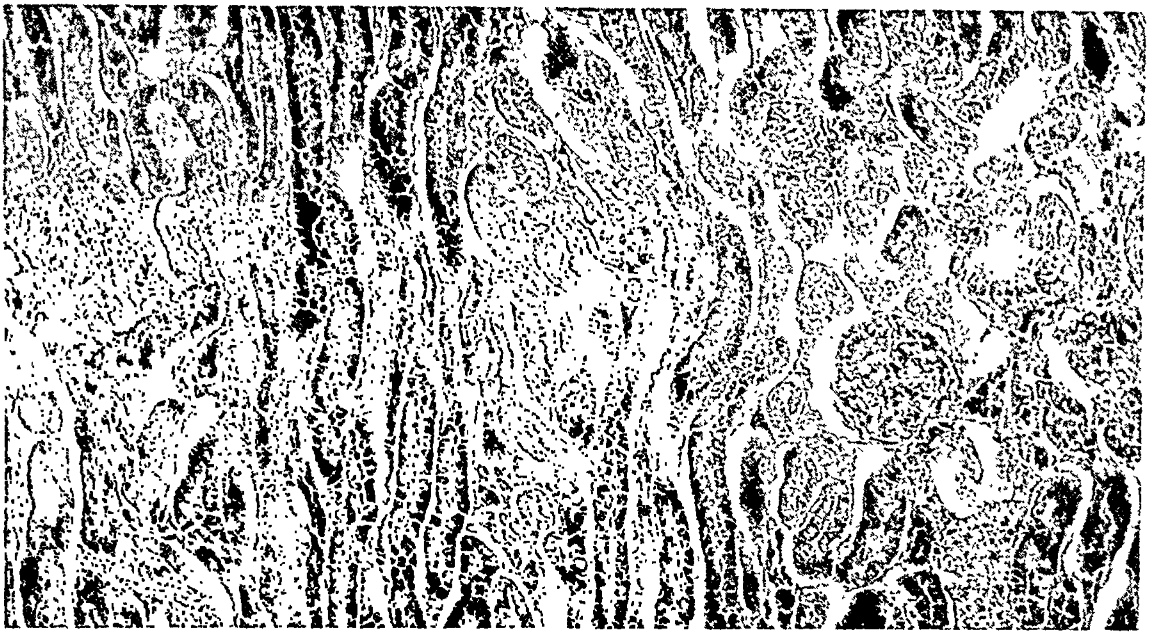

Fig. 7.—Experimental pancreatitis (described procedure). Animal did not survive. Renal tubules disclose hyaline degeneration; these changes were not consistently noted, and this particular microsection was best example of this pathologic change. *Such renal damage might explain appearance of* albuminuria in some instances of acute hemorrhagic pancreatitis in man. × 150.

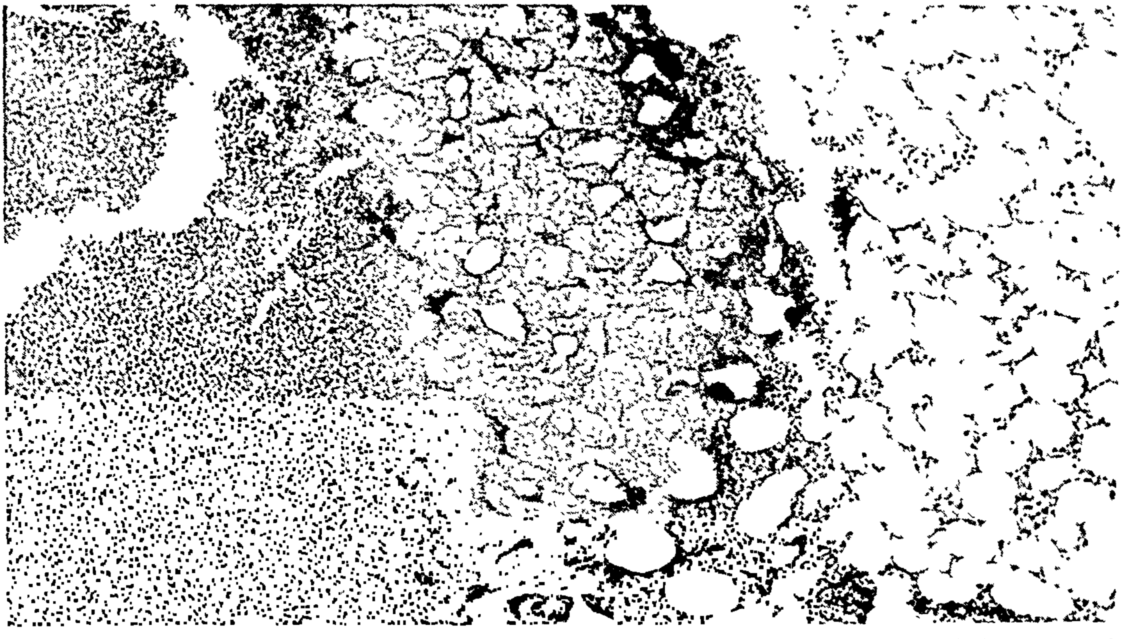

Fig. 8.—Experimental pancreatitis (described procedure). *Microsection of omentum discloses normal* fat cells, necrotic fat cells and inflammatory cells, as three distinct layers. × 150.

was subtotal (70 to 80 per cent) and was supplemented by intravenous infusions of Dextran® and/or 5 per cent dextrose solutions. The results (*Addenda,* Note 6) disclose that none of these "therapeutic" surgical procedures affected the mortality rate when compared to the "baseline" group of 10 dogs (experimental pancreatitis produced as described). In the "external ductal drainage" and in the "resection" groups, it was noted, of the animals that died, that they usually had lived at least four to six days, an increase in the survival time 200 per cent over that of the "baseline" group. This indicates some amelioration of the lethal effect, although there was no improvement in the final mortality rate. Further studies are being instituted and are in progress to modify or change the technic and to discover whether the surgical approach to this disease has merit.

ADDENDA

NOTE 1.—The experimental methods used to produce pancreatitis in the laboratory animal are here listed chronologically. A few in the literature have not been included because they resemble almost identical data previously reported.

1. Injection of pancreatic duct with bile and sweet oil; dog (Bernard,[6] 1856).
2. Injection of pancreatic duct with gastric juice; dog (Hlava,[7] 1890).
3. Injection of pancreatic tissue, ground glass, and water mixture into pancreatic parenchyma; cat (Hildebrand,[8] 1895).
4. *Injection of pancreatic duct* with hydrochloric, nitric and chromic acids; dog (Flexner,[12] 1900).
5. Injection of pancreatic duct with bile, soaps, fatty acids, and formaldehyde; dog (Opie,[13] 1901).
6. Ligation of pancreatic duct at height of digestion; dog (Hess,[14] 1903).
7. Injection of pancreatic duct with bile salts; dog (Flexner,[15] 1906).
8. Injection of pancreatic duct with activated commercial trypsin; dog (Polya,[16] 1912).
9. Injection of pancreatic and common bile ducts with bile and fecal material; dog (Nordman,[17] 1913).
10. Injection of pancreatic duct with pig's bile; dog (Whipple and Goodpasture,[18] 1913).

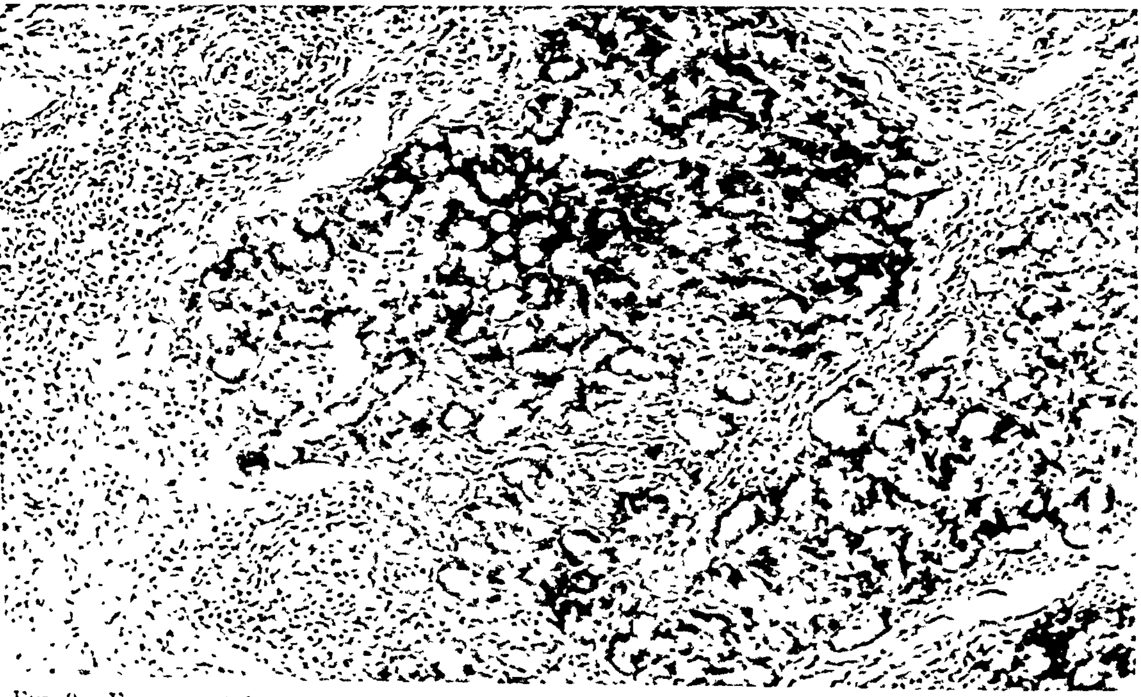

FIG. 9.—Experimental pancreatitis (described procedure). In animal that survived for thirty days, microsection discloses fibrous tissue infiltration of pancreas; two intact islets are shown, surrounded by normal-appearing acini. × 150.

11. Injection into gallbladder under pressure, of bile plus Staphlococcus flavus culture; cat (Archibald,[19] 1919).
12. Ligation of common bile duct distal to entrance point of pancreatic duct; goat (Mann and Giordano,[20] 1923).
13. Ligation of pancreatic duct plus administration of fatty meal; cat (Wangensteen and others,[21] 1931).
14. Injection of pancreatic duct with B. coli bullion culture and "infected" bile; dog (Kusunoki,[22] 1936).
15. Injection of mercury droplets into pancreatic artery; dog (Smyth,[24] 1940).
16. Ligation of pancreatic duct plus stimulation of vagus nerves; cat (Florey and others,[25] 1940).
17. Ligation of pancreatic duct plus administration of pilocarpine; dog (Coffey,[23] 1942).
18. Ligation of pancreatic duct plus administration of secretin, pilocarpine, acetylcholine and eserine; cat (Lium and Maddock,[26] 1948).
19. Ligation of pancreatic duct, impairment of vascular (blood) supply and administration of secretin; dog (Popper, Russell, and Necheles,[27] 1948).
20. Prolonged electrical stimulation of left splanchnic nerves; dog (Mallet-Guy,[28] 1949).
21. Repeated subcutaneous injection of mecholyl in a beeswax—mineral oil mixture; dog (Wener and others,[29] 1950).
22. Intraperitoneal injection of ethionine (α-amino-γ-ethylthiobutyric acid); rat (Farber and Popper,[30] 1950).
23. Injection of pancreatic duct with sodium taurocholate and commercial trypsin; dog (Ripstein and Thompson,[10] 1950).
24. Injection of pancreatic duct with autogenous bile (modified after Lewis and Wangensteen, 1950); dog (Persky and others,[31] 1951).
25. Ligation of pancreatic duct plus evaporated milk feedings; dog (Schaffarzick and others,[32] 1951).
26. Ligation of pancreatic duct and injection of saline solution under pressure; dog (Gibbs and Ivy,[33] 1951).
27. Intraperitoneal, subcutaneous and oral administration of ethionine; dog (de Almeida and Grossman,[34] 1952).
28. Crushing of pancreatic tissue; dog (Thistlewaite and Hill,[35] 1952).
29. Repeated traction on periductal (biliary and pancreatic) nylon sutures; dog (Waite,[11] 1952).
30. Injection of pancreatic duct with autogenous bile; dog (Hoffman and others,[36] 1953).
31. Pancreatic ischemia produced by temporary or permanently compromising the blood supply with ligature or clamp; rat (Block and others,[37] 1954).
32. Local pancreatic application of meningococcic toxin, followed by parenteral administration of the toxin (a Schwartzmann reaction); rabbit (Thal and Brackney,[38] 1954).
33. Pancreatic and bile duct interanastomosis plus administration of morphine (to produce spasm of sphincter of Oddi); dog (Powers and others,[39] 1955).
34. Ligation of bile duct, pancreatic resection, and retrograde pancreatijejunostomy on Roux-en-y principle; goat (Whitrock and others,[40] 1955).
35. Diversion of bile flow into pancreatic duct system; dog (Cross and others,[41] 1955).
36. Injection of bacteria into pancreatic duct; dog (Thal and others,[42] 1956).
37. Injection of pancreatic duct with dicetyl phosphate plus placement of "Ameroid" collar around pancreatic duct; dog (Floyd and Christophersen,[43] 1956).
38. Pancreaticocholedochostomy; anastomosis of main pancreatic duct to common bile duct; production of duct spasm by administration of morphine (Stein et al.,[44] 1956).
39. Isolation and closure of duodenal loop; gastroduodenostomy bypass, and division-ligation of common bile duct; dog (Pfeffer and others,[45] 1957).
40. Ligation of pancreatic duct and pancreatic vascular supply; dog, cat (Menguy and others,[46] 1957).
41. Injection of pancreatic duct with bile, trypsin, and/or decholin; dog (Anderson and others,[47] 1958).
42. Pancreatic (interstitial) injection with trypsin and trypsinogen; dog (Keith and others,[48] 1958).

NOTE 2.—Armour's Tryptar®: Purified crystalline trypsin derived from mammalian pancreas glands. Stable in dry form. When placed with buffered phosphate solution, 75 per cent of proteolytic activity is dissipated in three hours. Effective range is pH 5 to 8.

NOTE 3.—Armour's buffered phosphate solution (Sorensen's), buffered at pH 7.1. Prepared by dissolving anhydrous dibasic sodium phosphate, 6.6 mg. per cubic centimeter, and anhydrous monobasic potassium phosphate, 2.7 mg. per cubic centimeter, in water.

NOTE 4.—Determination serum amylase (Krautman method): The Folin and Wu method of blood dextrose determination is modified by the use of a special deproteinizing solution; the normal-average serum amylase activity is 70 to 160 units per 100 cc. of blood serum (Am. J. Clin. Path. 3:9, 1939; Tech. Suppl.).

NOTE 5.—Blood sugar determination: The modified Folin and Wu method was used (*J. Biol. Chem.* 38:81, 1919. and 67:357, 1926).

NOTE 6.—The study is charted and summarized in the accompanying table.

Résumé of Experimental Study

	Number of Surgical procedures (dogs)	*Died*	*Survived*
Experimental pancreatitis (induced as described in text)	10	7	3
Experimental pancreatitis plus vagisection	10	9	1
Experimental pancreatitis plus vagisection 30 days prior to induction of disease	10	7	3
Experimental pancreatitis *plus external pancreatic* ductal drainage	10	8	2
Experimental pancreatitis plus pancreatic resection and intravenous infusions (12 hours after pancreatitis was induced)	7	7	0

SUMMARY

A method of producing acute hemorrhagic pancreatitis in the dog is described; no originality is claimed as to its mode of application. The method has merit in that it embodies the predominant concept of the pathogenesis of acute hemorrhagic pancreatitis; it consistently produces the same lesions each time it is applied, and it has inherent simplicity. This simplicity has led the authors to the opinion that it could serve as an experimental tool for investigators, as well as a teaching exercise for surgical resident trainees. It is suggested that the multiple and varied experimental procedures previously reported may have had a tendency to confuse and delay a long-needed concrete effort to find a definitive therapeutic approach to this disease in man. The problem of reducing the present significant morbidity and mortality rates should center around efforts to prevent the noxious products of pancreatic tissue necrosis from being absorbed by the peritoneal serosa and thus gaining the systemic vascular circulation.

ZUSAMMENFASSUNG

Der Verfasser beschreibt ein Verfahren zur Erzeugung einer akuten hämorrhagischen Bauchspeicheldrüsenentzündung beim Hunde, ohne Anspruch auf Originalität der Anwendung der Methode zu erheben. Das Verfahren hat das Verdienst, die vorherrschende Auffssung von der Pathogenese der akuten hämorrhagischen Bauchspeicheldrüsenentzündung zu verköpern, bei jedesmaliger Anwendung stets die gleichen Veränderungen hervorzurufen und sich durch eine ihm eigene Einfachheit auszuzeichnen. Wegen dieser Einfachheit wird die Methode sowohl als Werkzeug experimenteller Forschung als auch als Lehrübung für chirurgische Assistenten für geeignet gehalten. Es wird angedeutet, dass die vielfachen verschiedenen früher veröffentlichten Untersuchungsverfahren vielleicht dazu beigetragen haben, einen lange begehrten greifbaren Ansatz zur Entdeckung eines entschiedenen Behandlungsplanes dieser Erkrankung beim

Menschen zu stören und zu verzögern. Die Bemühungen um eine Herabsetzung der gegenwärtigen erheblichen Krankheitsund Sterblichkeitsziffern sollten sich darauf konzentrieren, die Absorbierung der schädlichen Erzeugnisse pankreatischer Gewebsnekrose durch die Bauchfellserosa zu verhindern und ihren Eintritt in die allgemeine Blutzirkulation zu vermeiden.

RÉSUMÉ

Une méthode permettant de produire une pancréatite hémorragique aiguë chez le chien est décrite; l'auteur n'a aucune prétention à l'originalité quant à son mode d'application. Le mérite de cette méthode est de faire ressortir la cause principale de la pathogénèse de la pancréatite hémorragique aiguë. Elle produit uniformément les mêmes lésions chaque fois qu'elle est appliquée et elle est d'une grande simplicité, ce qui incite les auteurs à penser qu'elle peut servir d'instrument de travail pour les expérimentateurs aussi bien que de moyen d'enseignement pour les internes de chirurgie. Le auteurs pensent que les techniques expérimentales multiples et variées rapportées antérieurement peuvent engendrer la confusion et retarder un effort de recherche depuis longtemps nécessaire en vue de trouver une voie d'approche bien défine de cette affection chez l'homme. Le problème de la réduction du taux élevé de morbidité et de mortalité devrait être centré autour des efforts tendant à éviter que les produits toxiques provenant de la nécrose du tissu pancréatique soient absorbés par la séreuse péritonéale et entraînés dans la circulation vasculaire.

RESUMEN

Se describe en este trabajo un método de provocar en un perro una pancreatitis aguda hemorrágica. No se trata de un método original. El mérito del método consiste en que concierne al concepto dominante de la patología de la pancreatitis hemorrágica aguda; el métod produce sistemáticamente las mismas lesiones cada vez que se emplea y tiene una gran simplicidad. Tal simplicidad lleva a los autores a la conclusión de que puede ser empleado como norma experimental para los investigadores así como al ejercicio de la enseñanza para futuros cirujanos. También opina el autor que las diversos y múltiples procedimientos experimentales conocidos con anterioridad, tendían a la confusión y a retrasar un esfuerzo aunado por encontrar un método terapéutico definitivo para esta enfermedad. El problema debe centrarse en reducir las cifras actuales de morbilidad y mortalidad evitando que los productos tóxicos del tejido pancreático necrosado absorben la serosa peritoneal y entren en la circulación vascular sistémica.

SUMARIO

Descreve um metodo para produzir pancreatite aguda hemorragica em cães. Esse método tem o mérito de enfeicar o conceito predominante da patogenia e consiste em produzir a mesma lesão cada vez que é aplicado com grande facilidade. Essa simplicidade pensa o A. poderá servir de meio para investigação bem como para motivo detreinamento de residentes. Acha que os metodos anteriormente descrito são multiplos e complexos levando a confusão e perda de tempo. O problema de reduzir a atual taxa de morbidade e mortalidade deve convergir para prevenir a produção de produtos toxicos da necrose pancreatica que são levados á corrente circulatoria pela absorção.

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In order to comprehend the role played by Renaissance art in the development of medicine, we should remember that medical science and art have been closely related for long periods in history. In ancient civilizations. medicine, art. and religion formed an indissoluble trinity. The priest of primitive cultures was also the medicine man who. besides acting as an intermediary between the gods and the people, used his influence with the deities to cure the sick. He was also the first patron of the arts, since he had to present the deities to his people in the most artistic form. which forced him to seek artists who could fashion the best images of the gods. The priest, therefore, was not only a healer but also a Maecenas.

In the Middle Ages, the trinity disintegrated and the medicine man and the artist became specialized figures. although art continued subserving religion. But in the Renaissance, art and medicine were again united. The need for representing the parts of the body with exactness forced the artist and the physician to become one and the same. But until dissections were authorized. the artist was forced to use diagrams of animals or to make imaginary drawings of the human body.

—Marti—Ibañez

Surgical Anatomic Aspects of the Anorectal Sphincter Mechanism and its Clinical Significance

GEORGE SHROPSHEAR, M.D., M.Sc., F.A.C.S., F.I.C.S., D.A.B.

CHICAGO, ILLINOIS

The surgical anatomic aspects of the anorectal sphincter mechanism are reviewed on the basis of histologic examination of the anorectal region. Emphasis is laid on the clinical importance of a previously undescribed interstitial space, the anal intermuscular interstice, which may be regarded as the gateway to the perianal region and the ischioanal fossa. The fact that each sphincter muscle has its associated longitudinal muscle provides an anatomic explanation of reciprocal innervation and the development of anal incontinence after fistulectomy, an iatrogenic complication that can be prevented by preservation of the sphincter mechanism as a functional anatomic unit.

THE concept of the anorectal sphincter mechanism as a composite structure, consisting of several muscles, was proposed by Milligan and Morgan.[1] This structure is usually described as consisting of four muscles, namely, the external sphincter, the internal sphincter, the conjoined longitudinal muscle and the puborectalis division of the levator ani. As will be seen, four additional muscles should be considered. Along with the muscularis submucosae ani, one should include the attachments of the anorectal sphincter mechanism posteriorly to the rectococcygeus muscle and anteriorly to the muscles at the central point of the perineum, e.g., the deep transverse perineal muscle, and the rectourethralis in the male or the rectovaginalis muscle in the female.

In spite of many important contributions to current knowledge of the surgical anatomic aspects of the anal canal, the literature is characterized by conflicting opinions, ambiguous terms and erroneous illustrations. The present study, based on the histologic examination of postmortem and surgical specimens of the anorectal region in 6 adults, 1 child and 8 newborn infants, was undertaken to gain a clearer understanding of the anatomic relations and to correlate these observations with certain clinical aspects of proctology.

Anatomic Relations.—The anatomic relations of the muscles constituting the anorectal sphincter mechanism can be demonstrated by histologic examination of this region in the newborn (Fig. 1). The homogeneous character of this composite structure appears to be related to the distribution of the fibers of the conjoined longitudinal muscle, which acts as a vinculum, sending its interlacing fibers into both the circular muscle coat of the rectum and the external sphincter, giving rise to

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*Senior Attending Surgeon, Provident Hospital, Chicago. Read at the Twenty-fourth Annual Congress of the North American Federation, International College of Surgeons, Chicago, Sept. 14-17, 1959.

†Submitted for publication Sept. 17, 1959.

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*Senior Attending Surgeon, Provident Hospital, Chicago.

Read at the Twenty-fourth Annual Congress of the North American Federation, International College of Surgeons, Chicago, Sept. 13-17, 1959.
Submitted for publication Sept. 15, 1959.

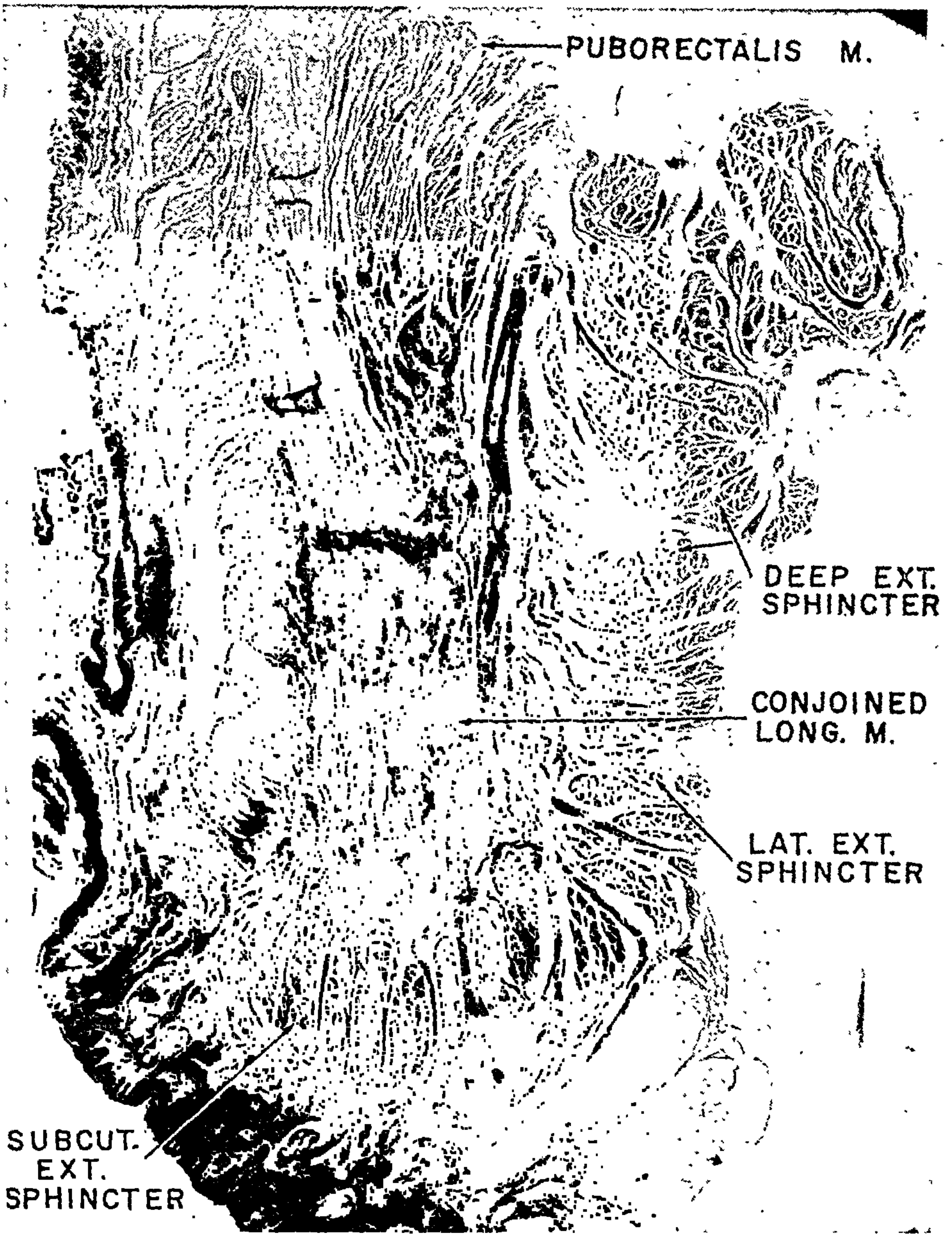

Fig. 1.—Sagittal section of entire anorectal sphincter mechanism (newborn). Note manner in which deep, lateral and subcutaneous parts of external sphincter become fused with hindgut by septums of conjoined longitudinal muscle which penetrate into ischioanal fossa and are inserted into perianal skin.

a sphincter mechanism composed of both voluntary and involuntary muscles.

The Muscularis Submucosae Ani and the Internal Sphincter: In 1923, in his system of anatomy, Tandler[2] described a group of longitudinal muscle fibers that penetrate through the circular muscle coat to give rise to the substratum of the columns of Morgagni (Fig. 2). This can be confirmed by histologic examination of this region through the frontal plane in the adult (Fig. 3). Fine and Lawes[3] also demonstrated well-developed involuntary muscle fibers in the submucosa of the anal canal, to which they applied the term "muscularis submucosae ani." Wilde[4] revealed that these fibers are derived from two sources. The present study confirms these observations (Fig. 4). The more superficial fibers are continuous with the muscularis mucosae of the rectum, while the deeper fibers are derived from the conjoined longitudinal muscle and penetrate between the bundles of the circular muscle to fuse with the superficial stratum, as they are traced distally in the anorectal submucosa.

The internal sphincter should not be construed as merely the thickened termination of the circular muscle coat. In the adult, according to Wilde,[4] the internal sphincter measures 30 to 35 mm. in length and 5 to 8 mm. in breadth. The upper level of the internal sphincter is marked by the penetration of the fibers of the muscularis submucosae ani, which corresponds roughly with the levator-rectal juncture. It is of interest that the fibers of the thickened termination of the internal sphincter are separated by the downward projection of the fibroelestic septums of the muscularis submucosae ani (Fig. 5). These penetrating fibers pass downward through the terminal internal sphincter to emerge between the apposed ends of the internal and external sphincter muscles, where they give rise to the so-called anal intermuscular septum and fuse at the mucocutaneous juncture with the submucosal fibers passing medial to the internal sphincter. It should be noted that the attenuated epithelium at the point of insertion into the mucocutaneous juncture may explain the "white line of Hilton"[5] and represents one of the sites of fusion of the hindgut with the cloacal membrane.

The Anal Glands: Between each two adjacent columns of Morgagni lies the anal crypt (Fig. 3). These pocketlike depressions can be seen to deepen into the distinct open and closed pouches (Fig. 6) first described in 1880 by Hermann and Desfosses,[6] who referred to them as anal glands in the anorectal submucosa with

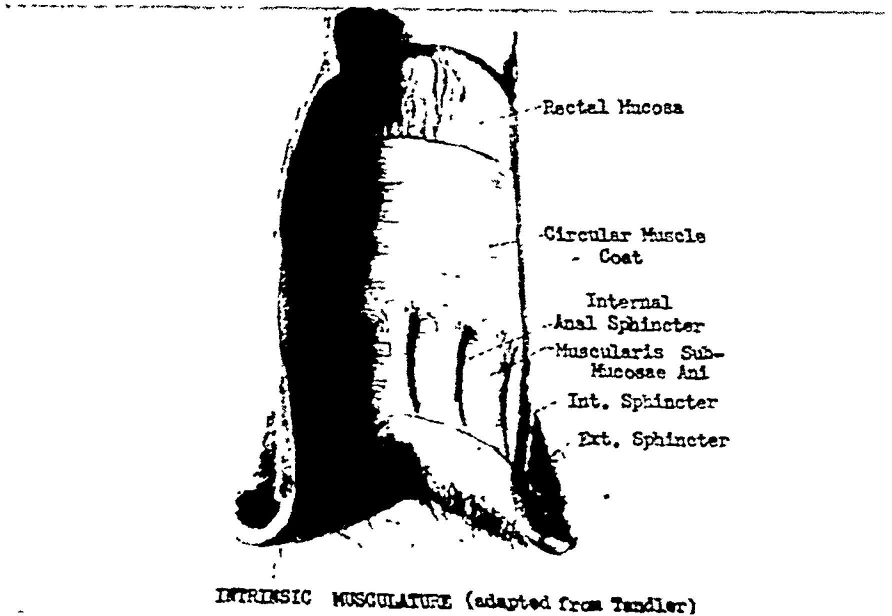

Fig. 2.—Intrinsic musculature of anorectal region (adapted from Tandler).

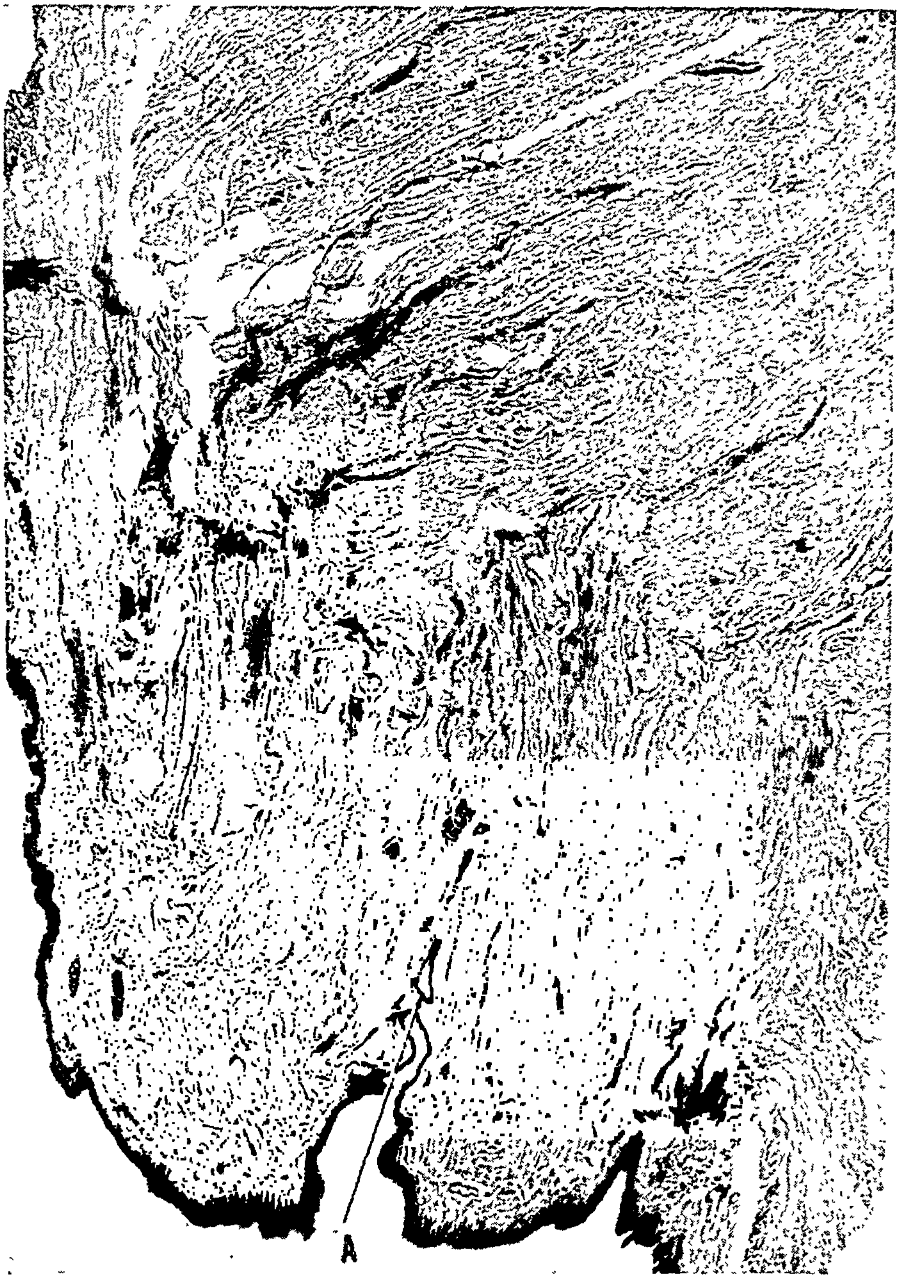

Fig. 3.—Frontal section (adult), showing how columns of Morgagni are formed by longitudinal fasciculi of muscularis submucosae ani breaking through circular muscle. Note anal crypt (*A*) between columns.

occasional extension into the internal sphincter and emphasized their surgical importance in the pathogenesis of anorectal fistula. In recent years, Tucker and Hellwig[7] and others,[8] have reinvestigated these structures, designating them, the "anal glands and ducts." The present investigation reveals that these saccular structures are intimately related to the fibroelastic fibers in the anorectal stroma

(Fig. 7) and appear to result from the downward prolongation of the cloacal membrane along with the mucosa of the lower rectum associated with the descent of the longitudinal fasciculi of the muscularis submucosae ani from the hindgut. Coronal sections through the level of the anal crypts reveal that these branched, tubular glands are lined by columnar epithelium in their depths with an abrupt change to transitional epithelium as these structures approach the surface (Fig. 8). The presence of the two types of cells in these glands may explain the development of adenocarcinoma in the anal crypts and the various anorectal carcinomas of extramucosal origin, as described by Zimberg and Kay.[9]

The External Sphincter and the Conjoined Longitudinal Muscle: The external sphincter represents, on either side, the downward prolongation of the puborectalis muscle. These muscles are fusiform in outline, flattened, and obliquely placed about the anus and anal canal. Anteriorly, the two muscles join in the region of the median raphe, where their deep fibers become fused with the posterior aspect of the deep transverse perineal muscle at the central point of the perineum. This is well illustrated in the male (Fig. 9), where the rectourethral muscle can be seen as the downward and forward continuation of the conjoined longitudinal muscle, blending with the other muscles at the central point of the perineum, as it passes to its insertion in the urethra. As was pointed out by Gorsch,[10] this anterior point

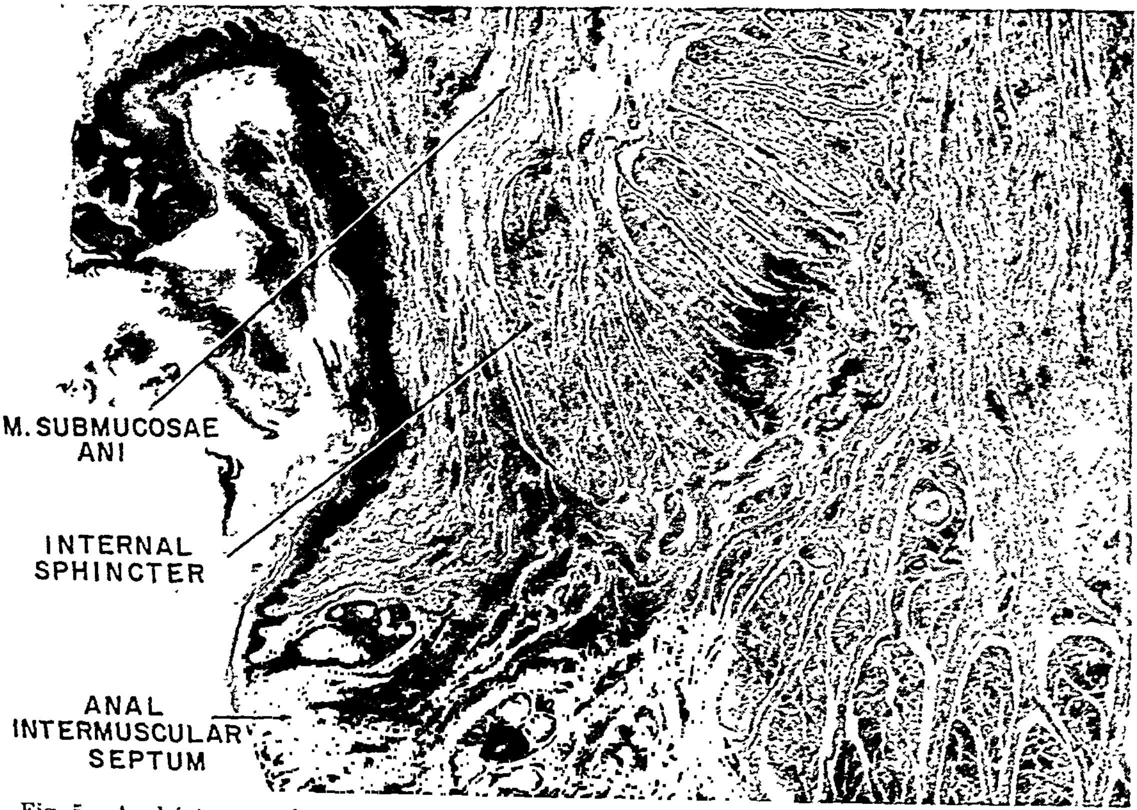

Fig. 5.—Anal intermuscular septum. Note how fibers of muscularis submucosae ani penetrate terminal internal sphincter and pass between apposed edges of internal and external sphincters to join with medial flaps at mucocutaneous juncture.

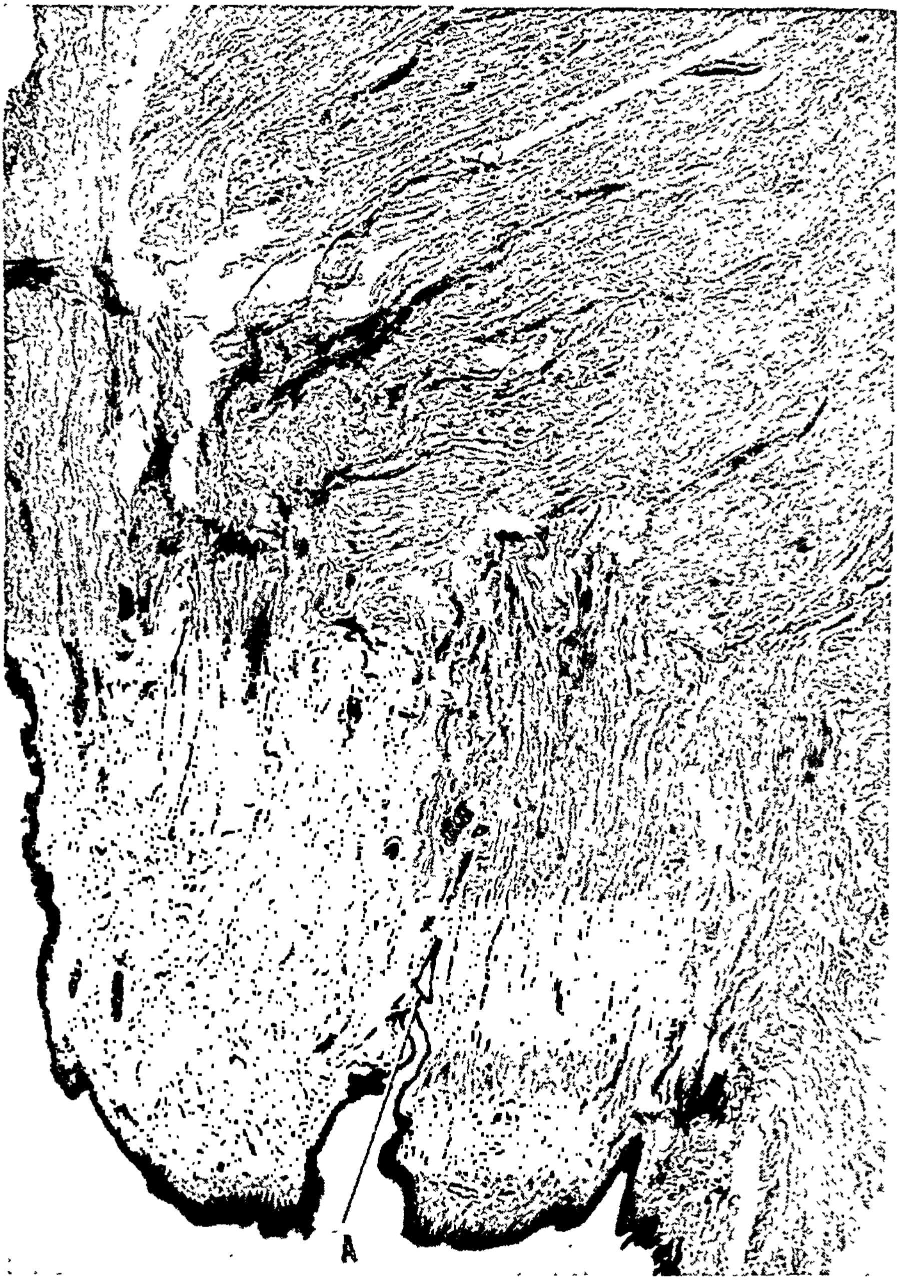

Fig. 3.—Frontal section (adult), showing how columns of Morgagni are formed by longitudinal fasciculi of muscularis submucosae ani breaking through circular muscle. Note anal crypt (*A*) between columns.

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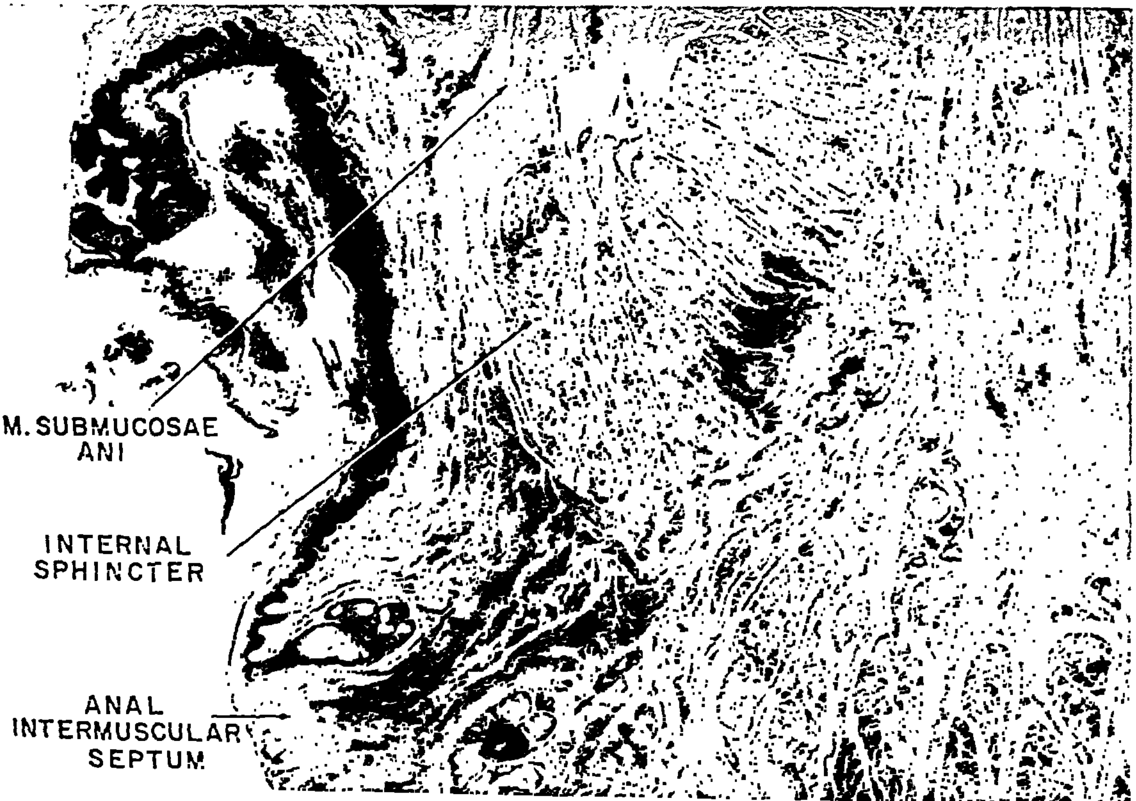

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of juncture is the fulcrum around which the anorectal and genitourinary musculature coordinate their functional activities.

It would appear that we are plagued with the common misconception that the fibers of the external sphincter muscle from each side converge posterior to the anal canal, permitting the formation of a potential space. The fibers of these muscles, however, not only converge but fuse, at their insertion into the anococcygeal raphe, from the anal canal to the tip of the

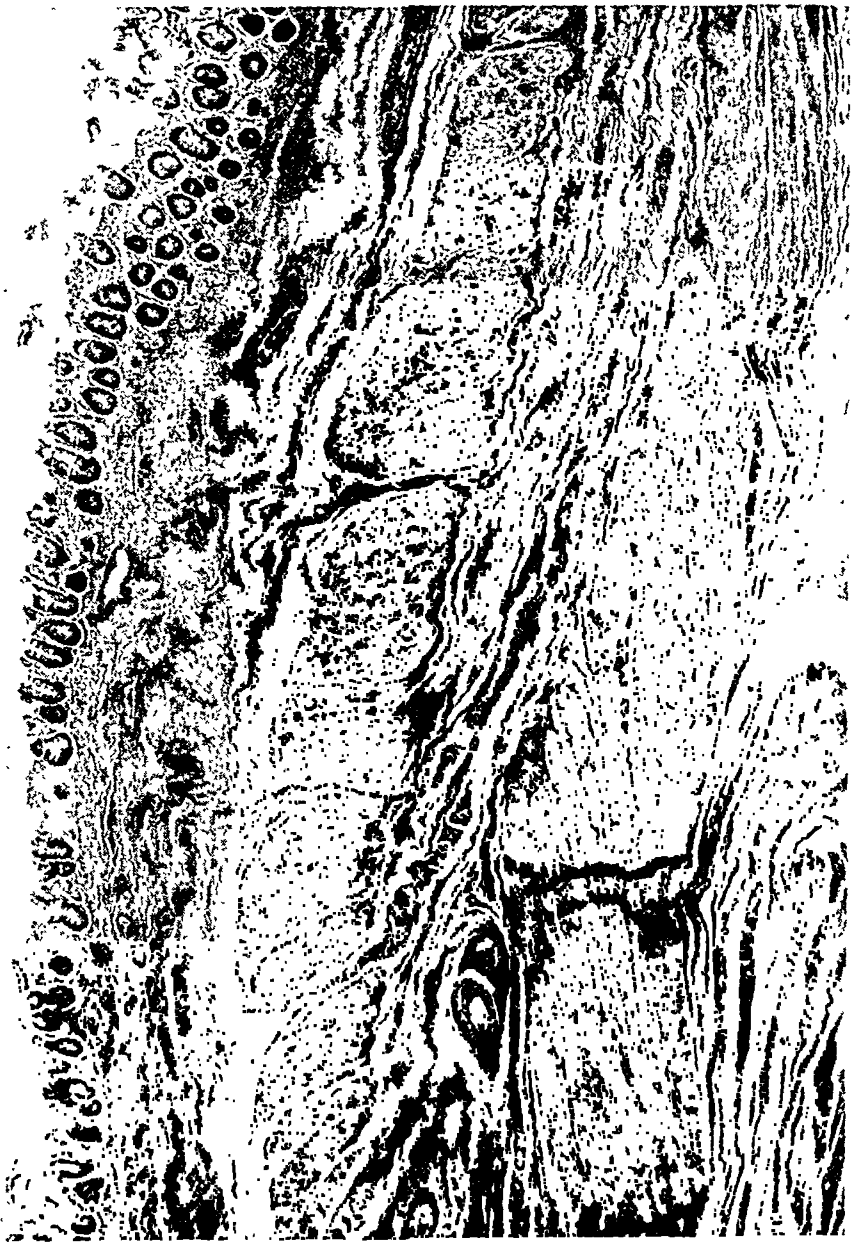


Fig. 4.—Sagittal section (newborn), revealing derivation of muscularis submucosae ani from muscularis mucosae of rectum and conjoined longitudinal muscle.

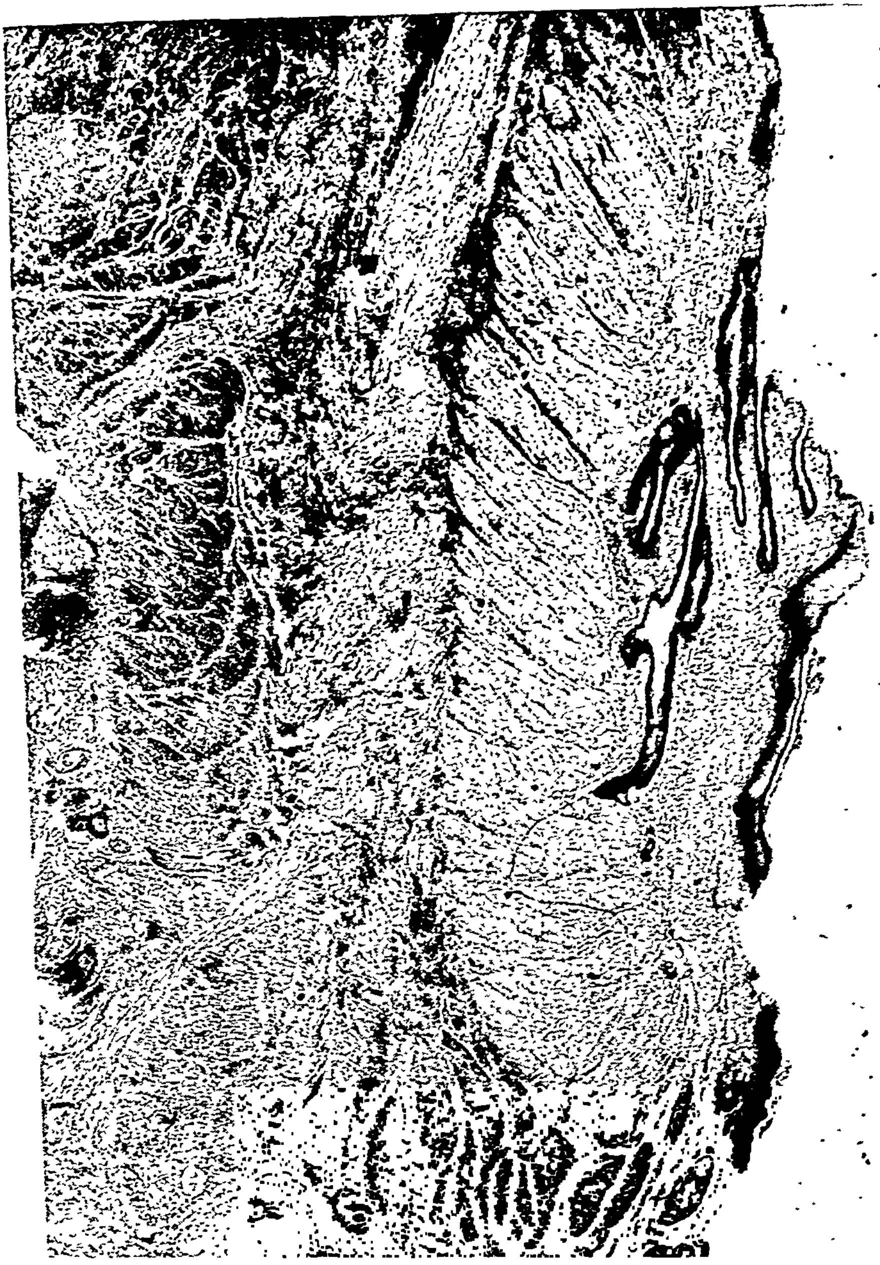


Fig. 6.—Sagittal section (newborn), showing anal glands.

coccyx[11] (Fig. 10). This fusion is noted in the subcutaneous part of the external sphincter by the decussation of the fibers in the anterior and posterior midlines. Not only are the fibers of the conjoined longitudinal muscle more compact posteriorly in the median plane (Fig. 11), but at a higher level they blend with voluntary muscle fibers from the anterior surface of the coccyx to form the rectococcygeus muscle. The compactness of the fused fibers along this posterior attachment of the sphincter mechanism, makes it difficult to confirm the presence of the posterior triangular space described by Brick.[12]

As is demonstrated in Figure 1, the ex-

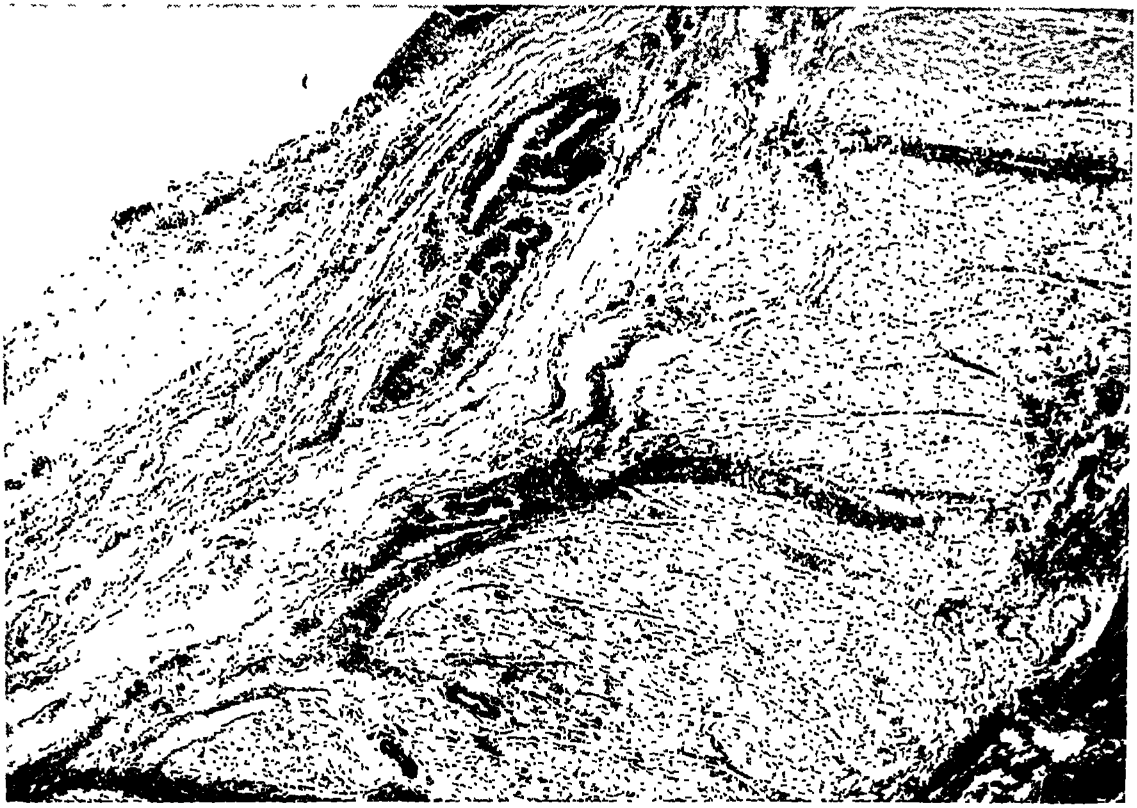


Fig. 7.—Sagittal section (newborn), revealing anal glands embedded among fibers of muscularis submucosae ani.

ternal sphincter is not divided into three components, which confirms the observations of Blaisdell[13] and more recently those of Goligher, Leacock and Brossy.[14] On either side, this muscle descends to occupy a position below and lateral to the internal sphincter. As it descends, it becomes fused with the hindgut by the septate terminations of the conjoined longitudinal muscle, which penetrate the external sphincter and divide it into numerous bundles. These septate fibers penetrate laterally beyond the external sphincter, passing into the ischioanal fossa, and insert into the perianal skin below the subcutaneous portion of the external sphincter. It is this insertion into the perianal skin which is responsible for the characteristic puckering of the anus. As was pointed out by Wilde,[4] there is no evidence to confirm the existence of a separate corrugator cutis ani muscle.

It is to be noted that each anal sphincter has its respective associated longitudinal muscle, the muscularis submucosae ani being distributed to the internal sphincter, while the conjoined longitudinal muscle passes to the external sphincter. The sphincters of the bowel, e.g., the ileocecal and the internal and external anal sphincters, according to Best and Taylor,[15] exemplify the principal of reciprocal innervation. A similar interlacing of the longitudinal fibers with the circular muscle at the ileocecal valve has been demonstrated by Toldt.[16] There appears to be a definite relation between this anatomic structural pattern and sphincter activity, providing an anatomic explanation for reciprocal innervation. Thus, stimulation of

the parasympathetics causes evacuation as the result of strong peristaltic contraction of the bowel, accompanied by contraction and shortening of its longitudinal fibers, which elevate and open the sphincters, giving rise to an apparent relaxation.

The Anal Intermuscular Interstice: It will be noted that at the level of the deep fibers of the external sphincter the longitudinal muscle of the rectum becomes fused with the fascia of the puborectalis muscle (Fig. 1). This conjoined longitudinal muscle becomes broader and increasingly fibroelastic as it descends. Just before it approaches the subcutaneous portion of the external sphincter muscle, the conjoined longitudinal muscle coat can be seen to end, terminating in multiple filamentous, fibroelastic septums which traverse a definite interstitial space before they proceed to divide the external sphincter into numerous bundles (Figs. 12 and 13). This previously undescribed *anal intermuscular interstice* almost completely encircles the anorectal region and has the following boundaries: the termination of the conjoined longitudinal muscle coat superiorly, the external sphincter muscle laterally and inferiorly and the internal sphincter medially. It is contiguous with the fibroelastic fibers of the muscularis submucosae ani, as they penetrate the internal sphincter muscle to form the anal intermuscular septum. In the region of the anococcygeal raphe and the median raphe, however, this tissue interval becomes obscured by the compactness of the septums of the conjoined longitudinal muscle. Coursing through this interstitial space, in addition to the septate fibers, are nerves, blood vessels and lymphatics surrounded by adipose tissue.

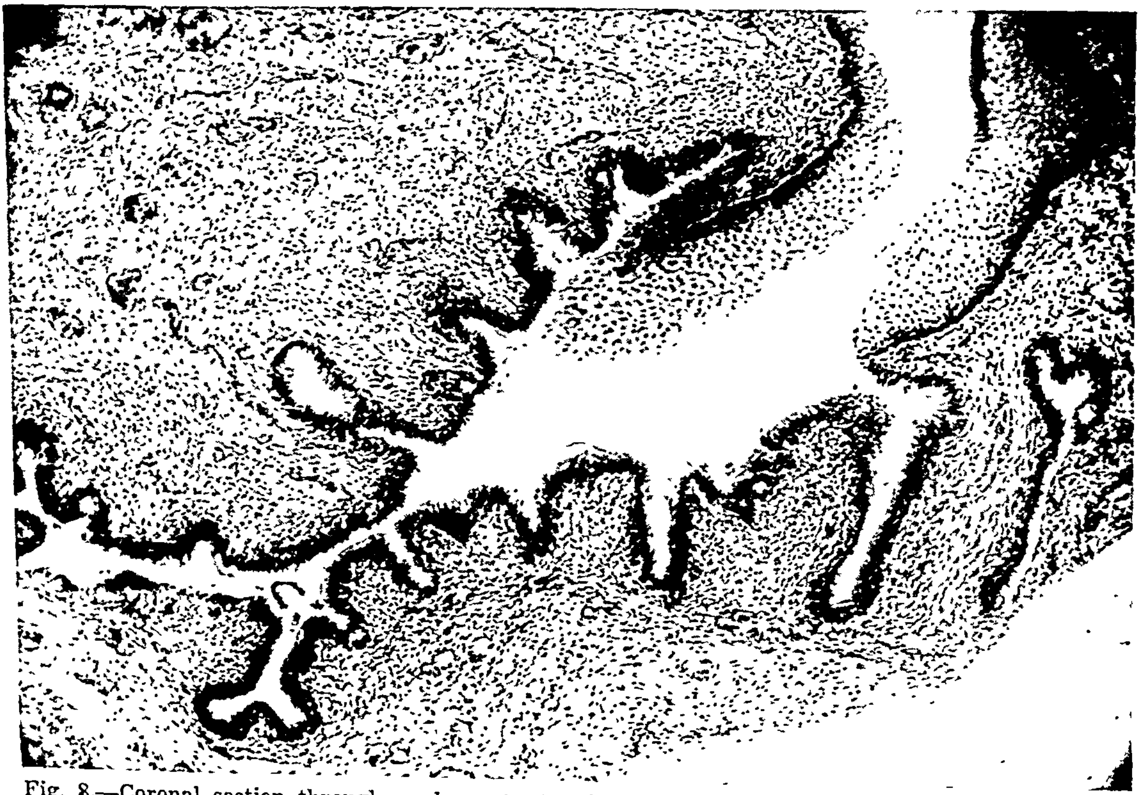
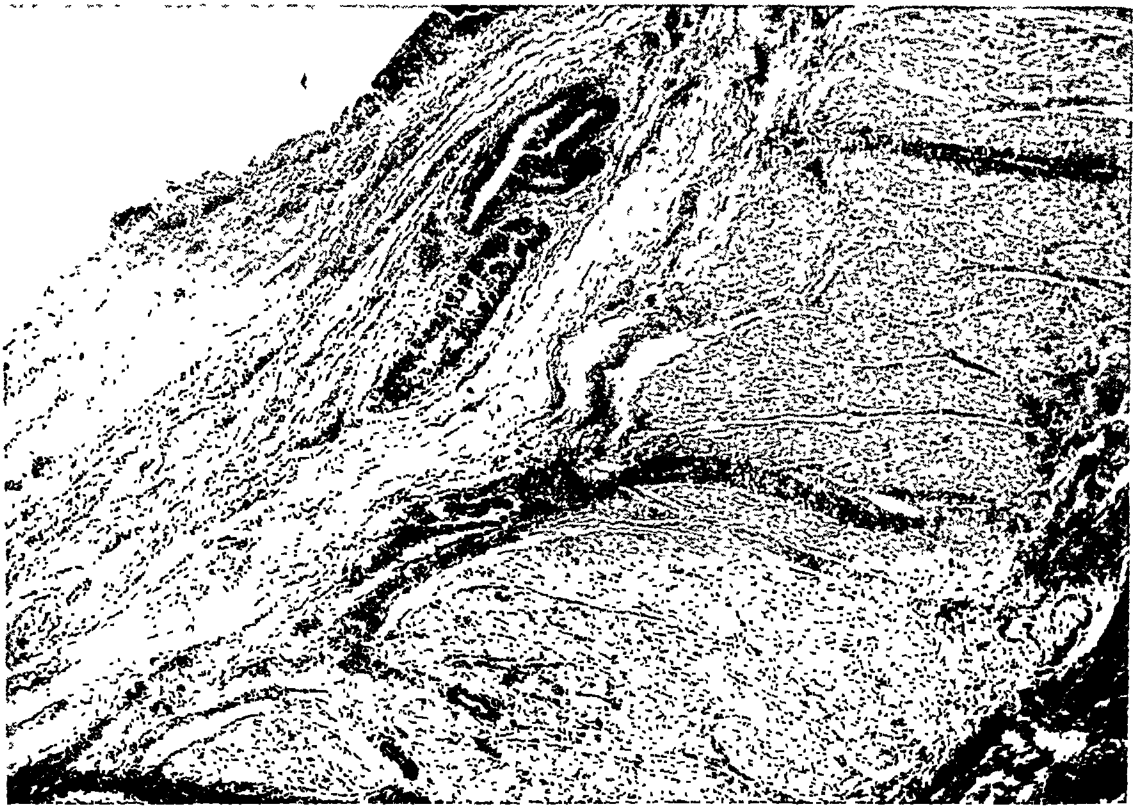


Fig. 8.—Coronal section through anal crypts (newborn), showing columnar cells in depth of anal gland, with abrupt change to transitional epithelium near surface.



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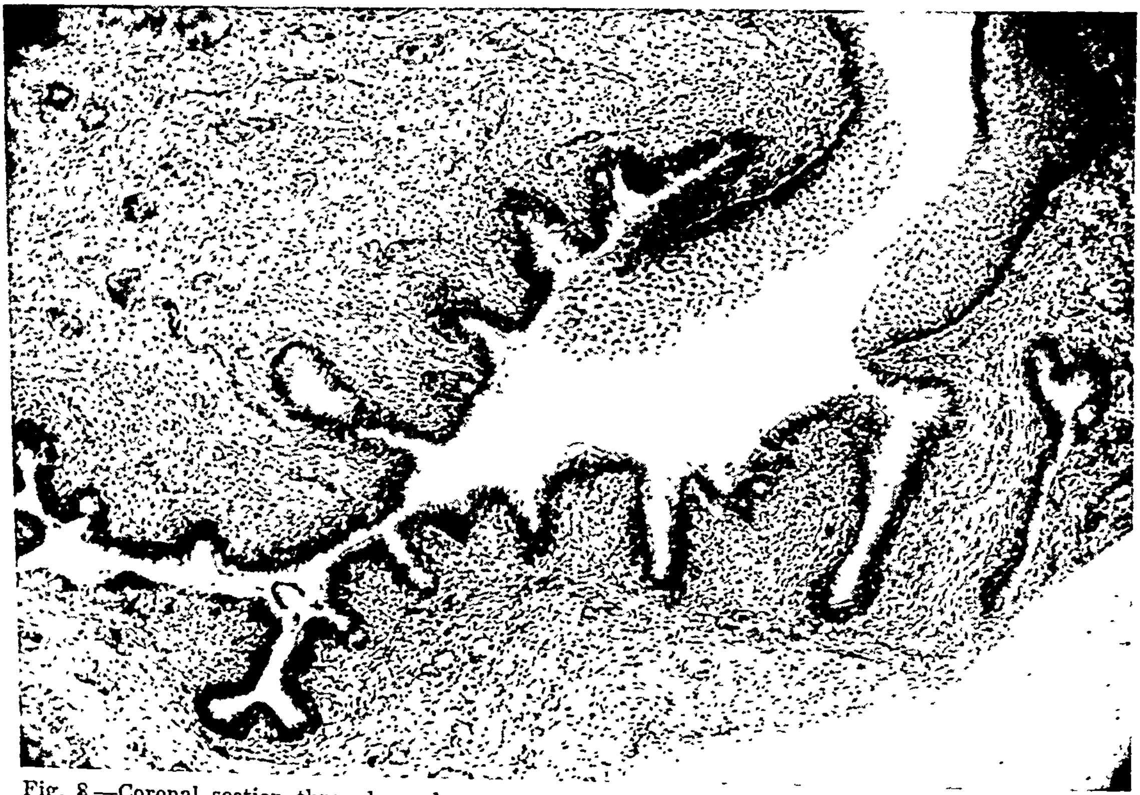
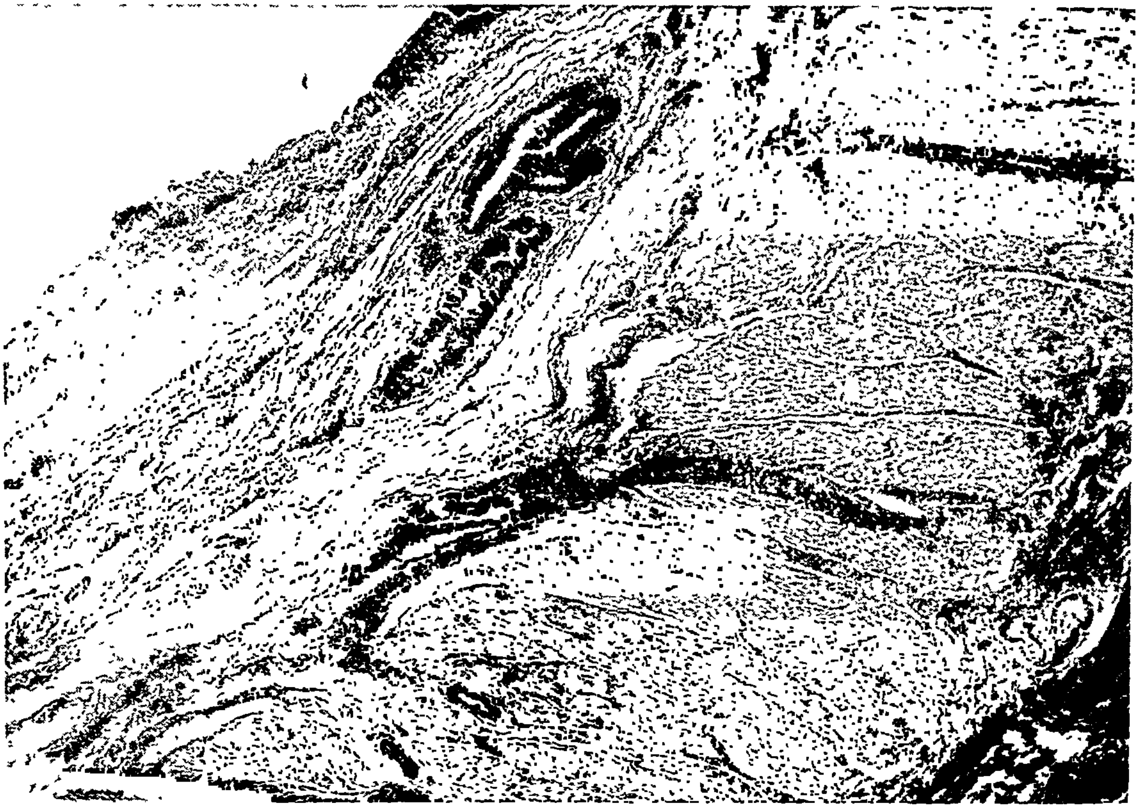


Fig. 8.—Coronal section through anal crypts (newborn), showing columnar cells in depth of anal gland, with abrupt change to transitional epithelium near surface.



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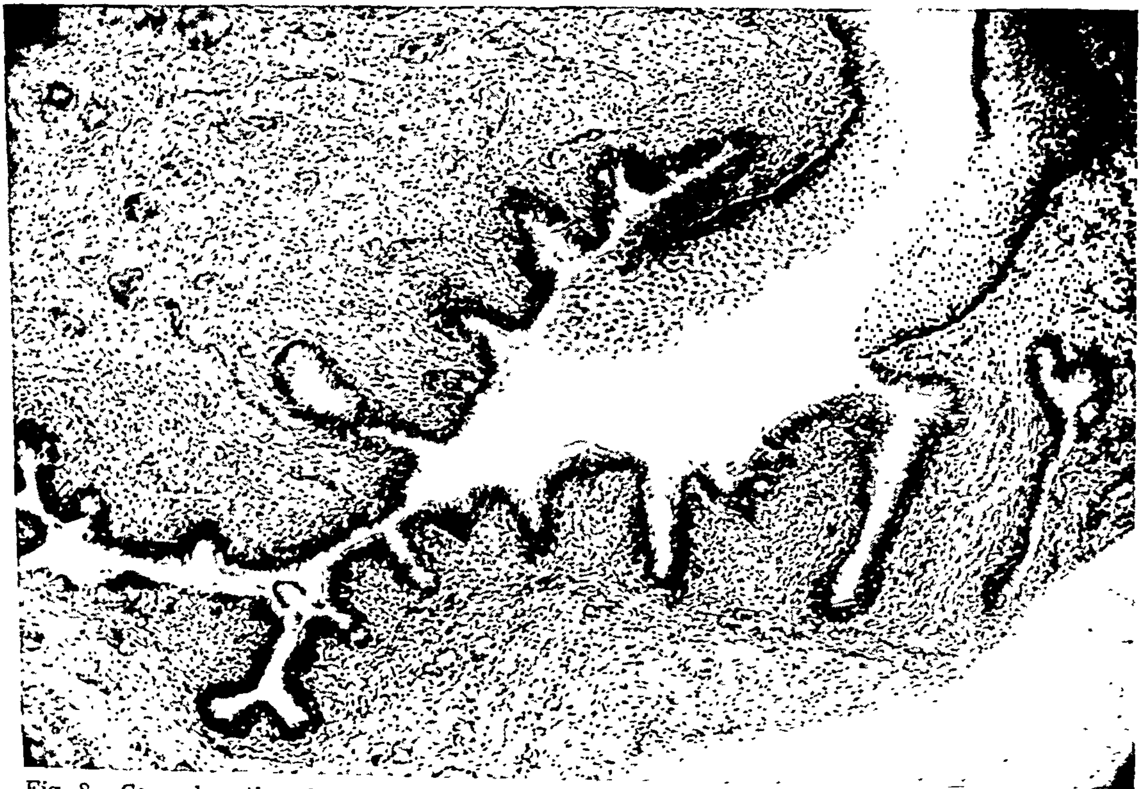

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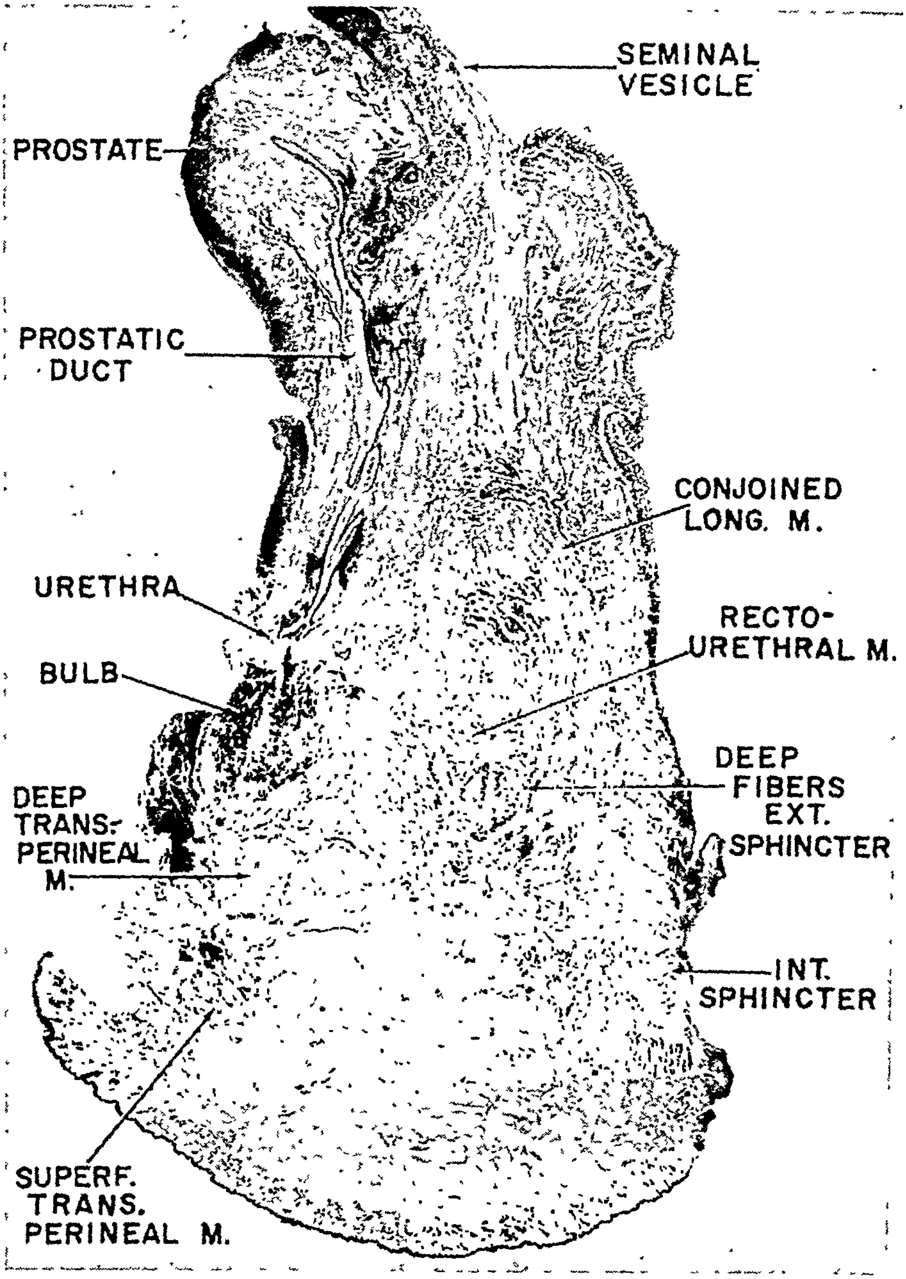

Fig. 9.—Sagittal section through median raphe in male (newborn), showing anterior relations. Note also compactness of conjoined longitudinal muscle and fibroelastic septums passing to skin.

Clinical Considerations.—The anal canal presents, perhaps, one of the best examples of the important relation between anatomic structure and the clinical manifestations of disease. The clinical significance of the anorectal sphincter mechanism appears to be related to the distribution of its longitudinal fibers, which plays an important role in anorectal suppurative disease, in the spread of anorectal malignancy and in the development of hemorrhoidal varicosities, as well as of postoperative anal incontinence.

Anorectal Suppurative Disease: Over the years, the proctologic surgeon has sought to explain the course of anorectal fistulas. Much emphasis has been placed on the role of the anal glands in this process. The present study reveals how an inflammatory lesion, arising in an infected anal crypt (Fig. 14), burrows through the fibers of the internal sphincter along the fibroelastic septums of the conjoined longitudinal muscle to gain access to the anal intermuscular interstice. The suppurative process may find egress from this interstitial space into either the perianal region or the ischioanal fossa (Fig. 12). While in some cases the inflammatory process may follow the septums that divide the external sphincter muscle, the spread of infection is usually determined by the distribution of the lymphatics and veins. This opinion finds support when one considers the symmetric course of horseshoe fistulas. In the perianal region the septums would appear to confine the suppurative process, giving rise to a "closed space infection." As demonstrated, the intimate relation between the anal glands and the submucosal septate fibers would seem further to confirm the role of these structures in the spread of anorectal infections, especially those involving the more superficial, terminal fibers of the internal sphincter muscle.

The upward spread of an inflammatory process can now be accounted for, as it burrows along the septums in the submucosal tissues, or in the interval between

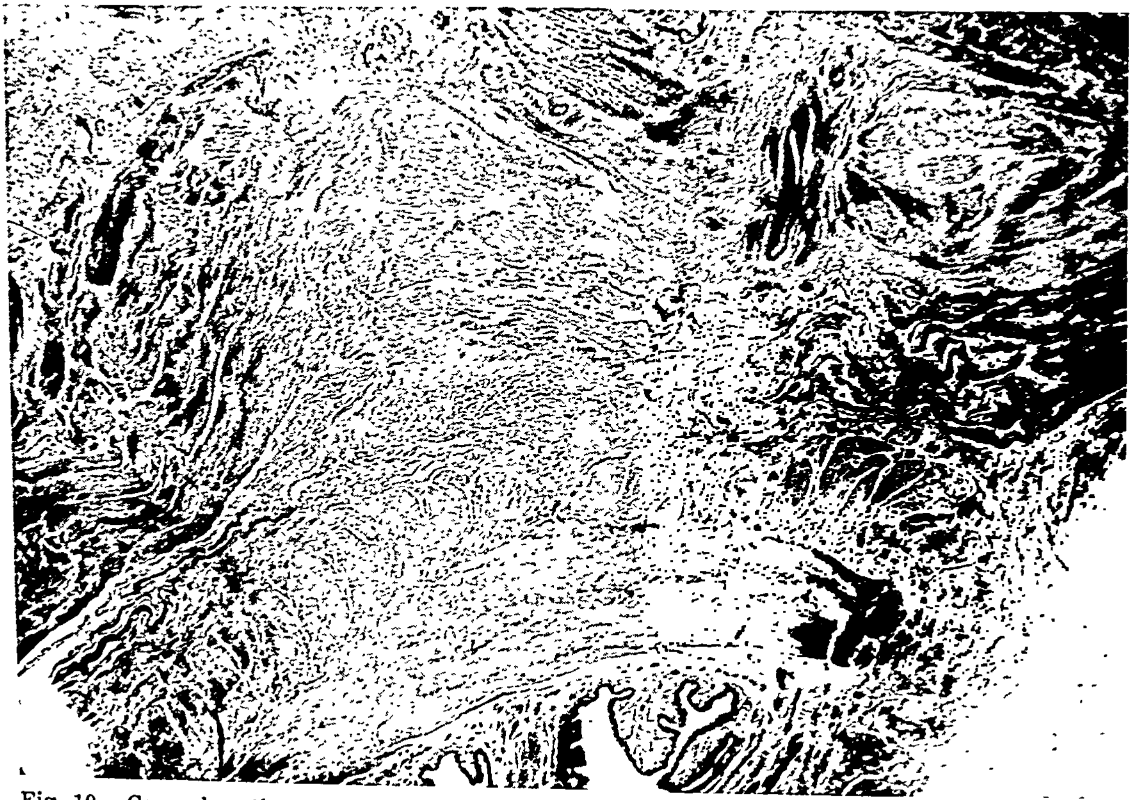

Fig. 10.—Coronal section through level of anal crypts, showing how fibers of external sphincter muscle from each side converge and become fused in posterior midline.

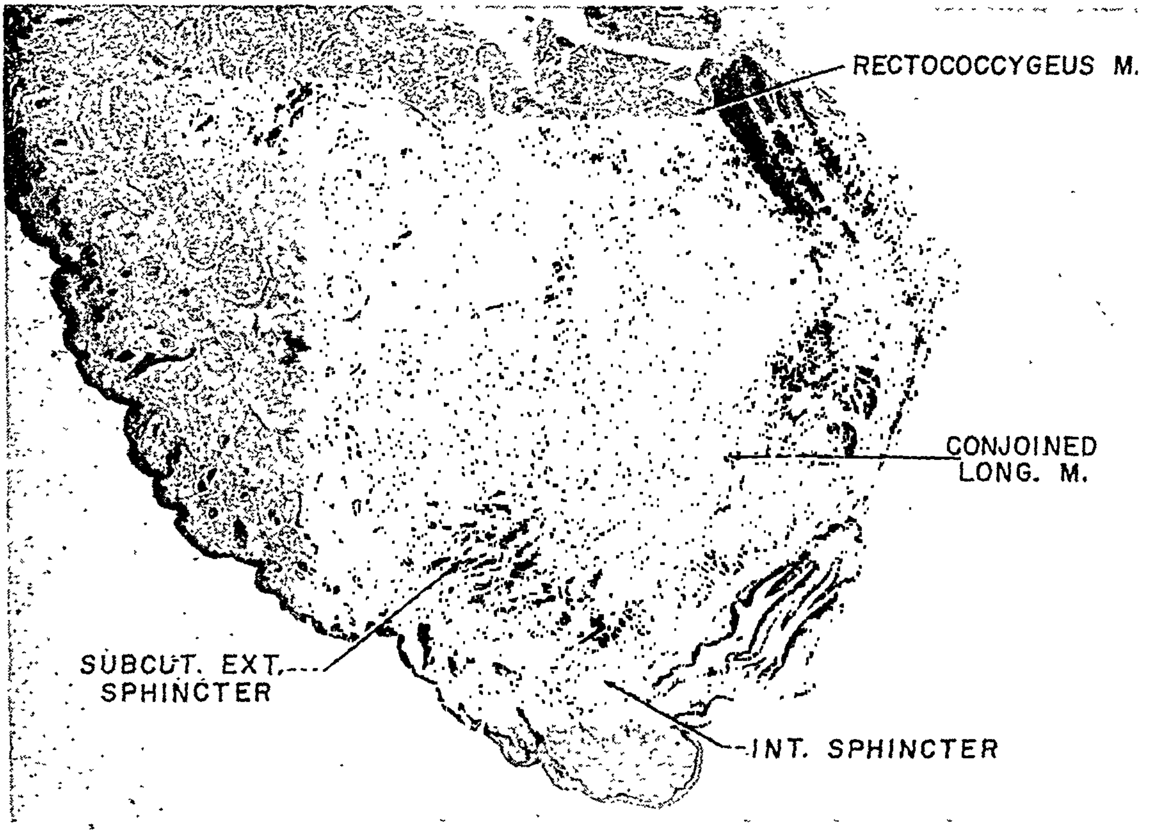

Fig. 11.—Sagittal section through anococcygeal raphe, showing compactness of conjoined longitudinal muscle, which, at higher level, blends with voluntary muscle fibers to form rectococcygeus muscle.

the circular and the conjoined longitudinal muscle, giving rise to either a submucous or an intermuscular anorectal abscess. This study also reveals how an infection may extend along the fibroelastic septums of the muscularis submucosae ani medial to the internal sphincter (Fig. 5), with little or no involvement of the sphincter mechanism, to exteriorize in the region of the mucocutaneous juncture. In an experience covering a number of years, I do not recall having noted an external sinus of an anorectal fistula in the anal fold or in the median raphe, except those sinuses at the anal verge associated with superficial subcutaneous fistulas. This may be explained by the compactness of the fibers of the conjoined longitudinal muscle, with obliteration of the anal intermuscular interstice at these points of fusion anterior and posterior to the anus. The tracts of deeper fistulas are generaly directed to the right or left of the anterior or posterior midlines, determined by the course of the lymphatics and veins.

The Spread of Anorectal Malignant Disease: Since the anal intermuscular interstice may be regarded as the "gateway" to the ischioanal fossa and the perianal region, its possible role in the spread of anorectal carcinoma was considered. Grinnell[17] has shown that involvement of the sphincter muscles and the perianal tissues occurs frequently in association with squamous cell carcinoma of the anus. Metastases in such cases appear to be most frequently confined to the downward and lateral zones of spread described by Miles[18] and to the inguinal nodes. Figure 15 illustrates the manner in which an adenocarcinoma of the anal crypt infiltrates laterally through the fibers of the internal sphincter muscle to spread intramurally, upward or downward, along the fibers of the conjoined longitudinal muscle. The downward spread of the carcinoma into the upper reaches of the anal intermuscular interstice can be observed, providing access to the inferior group of lymphatics which drain the anal canal and empty into the inguinal lymphatics. This observation suggests that, in determining the prognosis and the indication for inguinal node dissection, the entire anorectal sphincter mechanism should be examined histologically through the sagittal plane. Inguinal node involement may be anticipated if the carcinoma has infiltrated into the anal intermuscular interstice. The compactness of the fibers of the conjoined longitudinal muscle at the anterior and posterior points of fusion, with obliteration of the anal intermuscular interstice, may explain the relatively infrequent and late involvement of the prostrate, vagina, bladder and sacrum.

Hemorrhoidal Varicosities: In a previous communication[10] I postulated that, because of the rich anastomosis in the anal canal between the superior hemorrhoidal veins and the middle and inferior hemorrhoidal veins, one would assume that adequate drainage of this region should take place. It becomes apparent that hemorrhoidal varicosities are not the result of incompetent check valves in the superior hemorrhoidal veins alone. The implication is clear that there must be, at least, partial blockage of the tributaries of the middle and inferior hemorrhoidal veins.

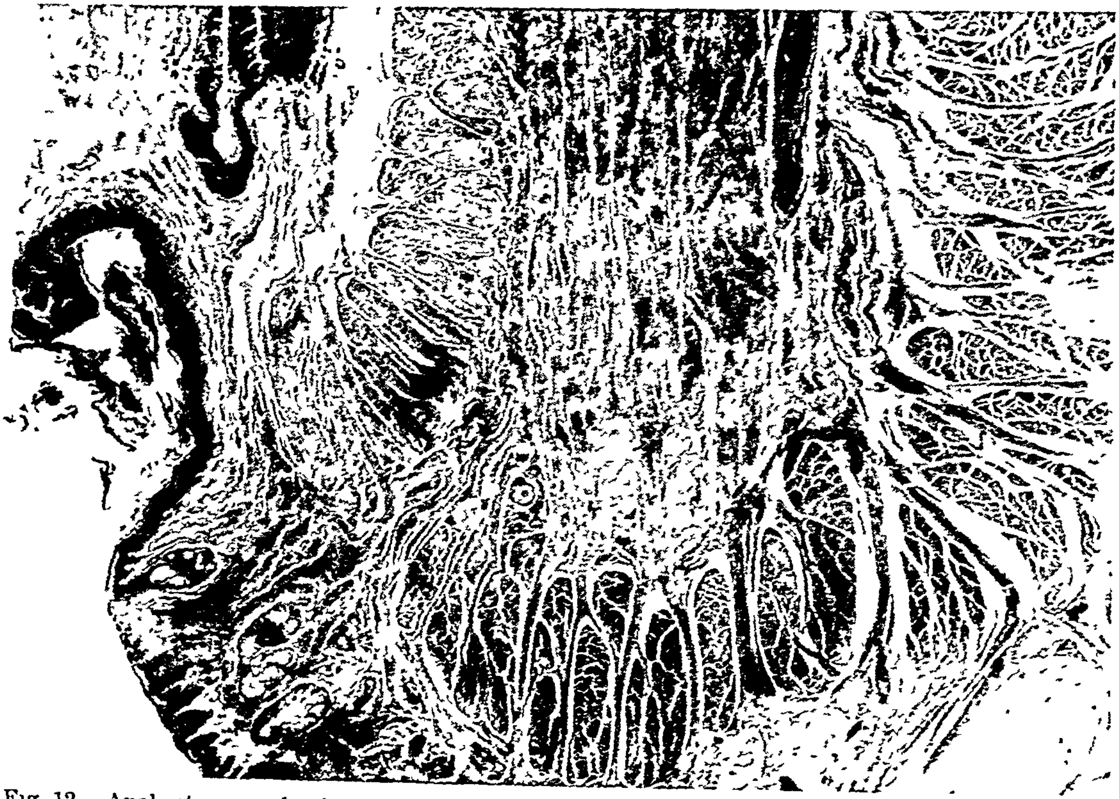

Fig. 12.—Anal intermuscular interstice. Note termination of conjoined longitudinal muscle and nerve and blood vessels in this tissue interval.

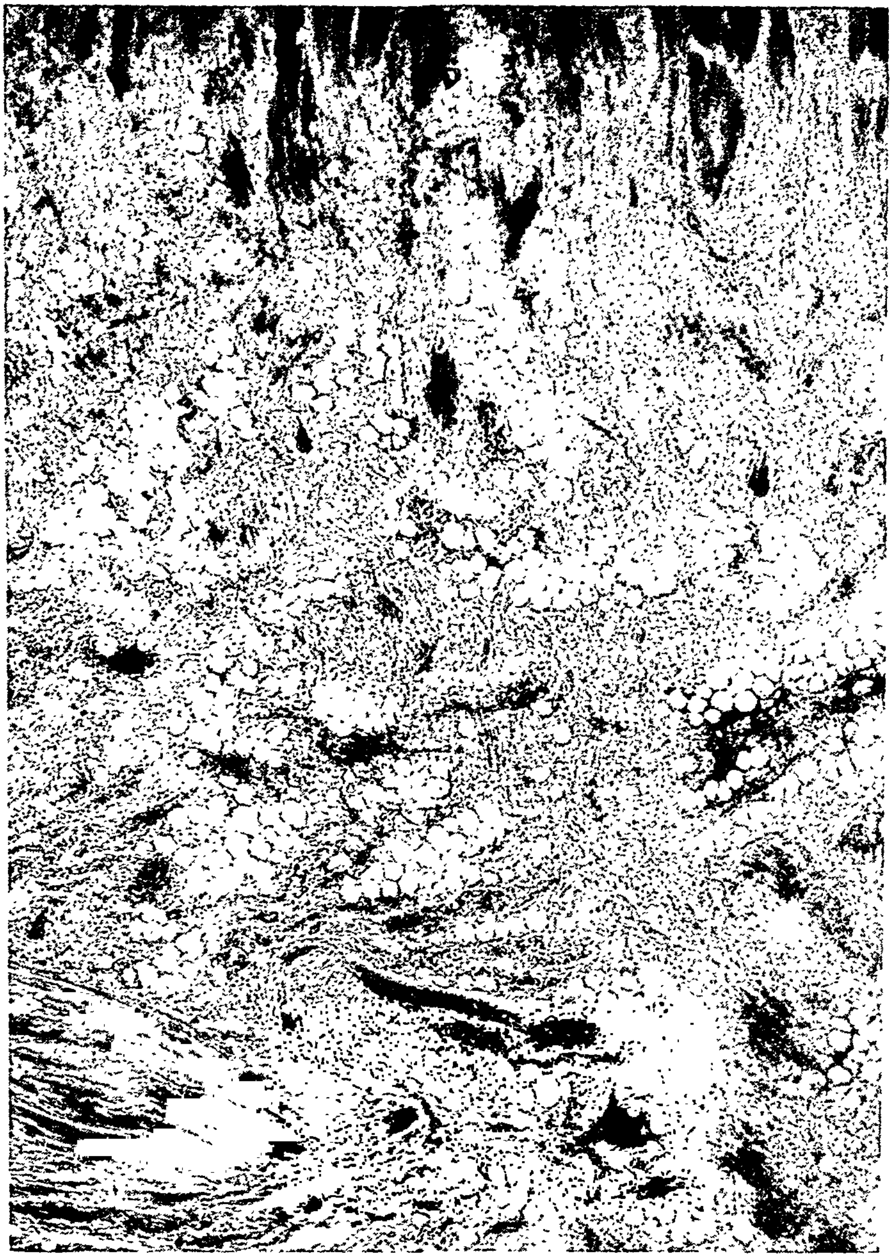

Fig. 13.—Frontal section (adult), showing anal intermuscular interstice. Note terminal fibers of conjoined longitudinal muscle above, with fibers of external sphincter below.

Internal hemorrhoids can be shown to be intimately related to the fibers of the muscularis submucosae ani that form the substratum of this type of lesion (Fig. 16). Either as the result of functional hypertrophy associated with the act of defecation and/or fibrosis related to chronic inflammation, thickening of these fibroelastic submucosal fibers occurs. This hypertrophy and/or fibrosis of the muscularis submucosae ani could provide an effective barrier to the tributaries of the

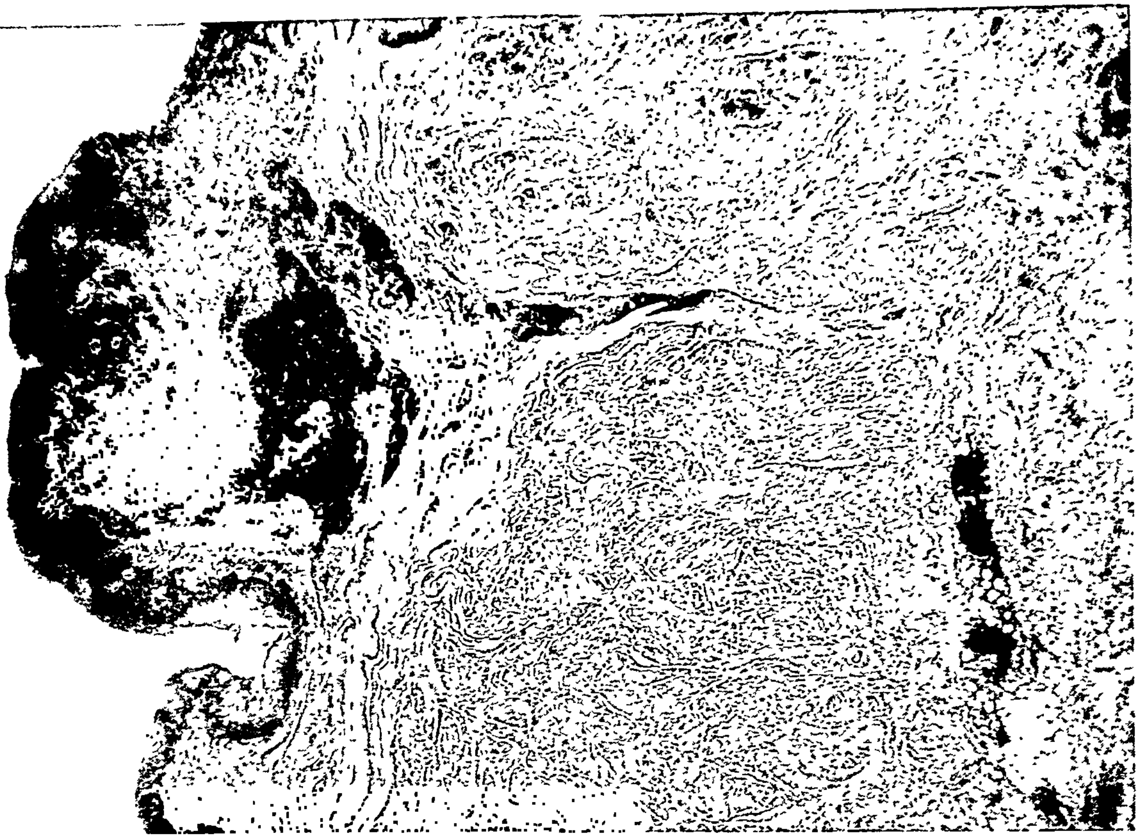

Fig. 14.—Infected anal crypt. Note manner in which inflammatory process burrows through fibers of internal sphincter to gain access to anal intermuscular interstice.

veins of the caval system, interfering with the venous drainage of this region. It is this muscle, aided by the internal sphincter and the conjoined longitudinal muscle, which is principally responsible for the spontaneous return of a protruded hemorrhoid.

Postoperative Anal Incontinence: This discussion is limited to a consideration of anal incontinence incident to the injudicious division of the anorectal sphincter mechanism during the performance of fistulectomy, giving rise to either total or partial fecal incontinence. Fortunately, total incontinence is much less frequent than partial incontinence, which is associated with limited control of the seepage of liquid feces and the passage of flatus. These iatrogenic tragedies are avoidable and may in part be explained by blind acceptance of the dictum of Milligan and Morgan[1] that, if any part of the anorectal ring lies above the probe inserted into the tract of the fistula, section of the whole muscle lying below the probe may be carried out. With this opinion, however, I take issue, since it implies impunity in severing the important distal fibers of the anorectal sphincter mechanism. When one considers the significance of the anal intermuscular interstice in the morbid anatomic changes associated with anorectal fistulas, it becomes obvious that it is the lower fibers of this structure that are involved in the suppurative process. From a functional standpoint, the architecture of this composite structure is such that the juncture of the apposed edges of the internal and external anal sphincters at the anal intermuscular septum is of prime

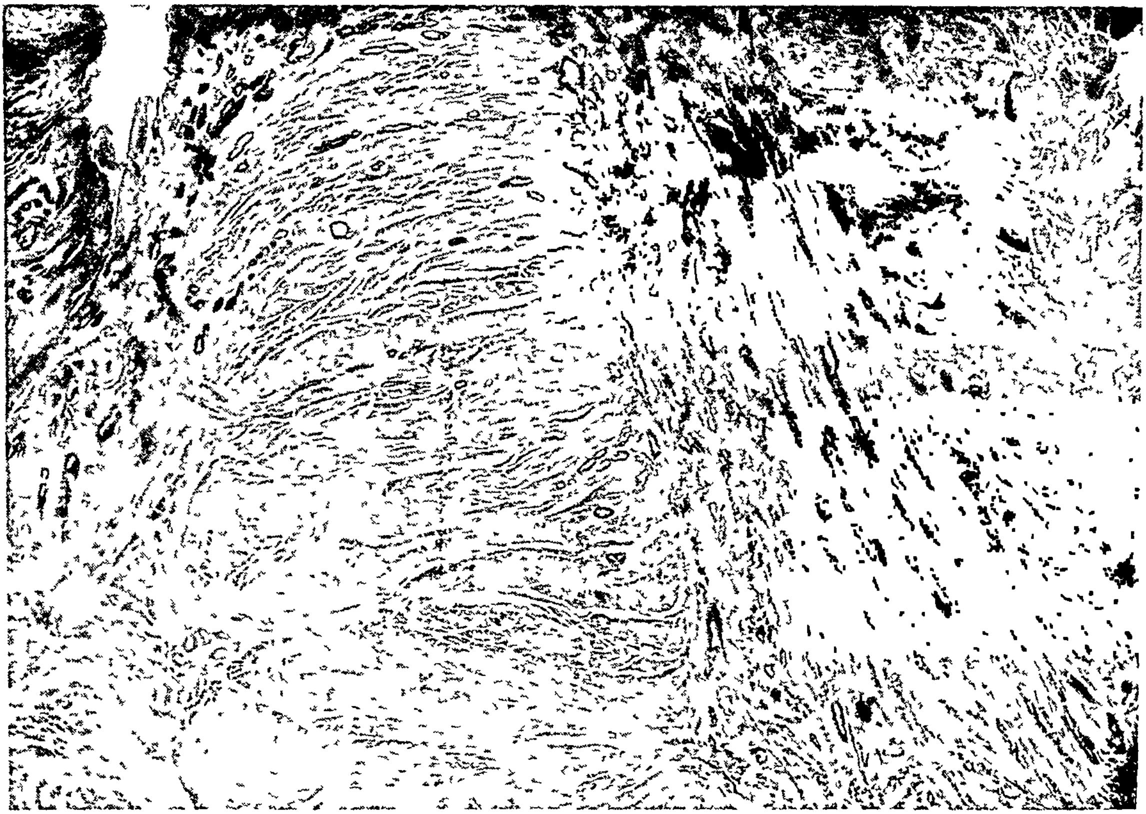

Fig. 15—Adenocarcinoma of anus, revealing manner of spread through sphincter mechanism. Note *infiltration into anal intermuscular interstice (lower right).*

importance in the reflex and voluntary control of the passage of flatus and feces (Fig. 12).

While the separation of these fibers and the development of the broad scar has been attributed by some to injudicious packing of the fistulectomy wound, postoperative anal incontinence appears to be the result of separation of the divided fibers of both the internal and external sphincters by the tonus and upward pull of their respective longitudinal muscles. The tonus of the conjoined longitudinal muscle is attested by persistent corrugation of the perianal skin, while that of the muscularis submucosae ani may be observed by the separation of the fibers of the internal sphincter during the performance of an internal sphincterotomy. Thus, the deeper the incision through the lower fibers of the anorectal sphincter mechanism, the greater the separation and the broader the scar.

Admittedly, the results following the various plastic procedures for the repair of anal incontinence are not brilliant. The proctologic surgeon should, therefore, be more concerned with the prevention of this avoidable complication. Injury to the anorectal sphincter mechanism can be minimized by the use of the "seton," a time-honored method dating back to Hippocrates.[20] The two-stage fistulectomy has been used and redescribed by many authors and is indicated in any case in which the fistulous tract is so situated that it is necessary to divide the lateral (superficial) and the subcutaneous fibers of the external sphincter muscle along with the internal sphincter. In more superficially

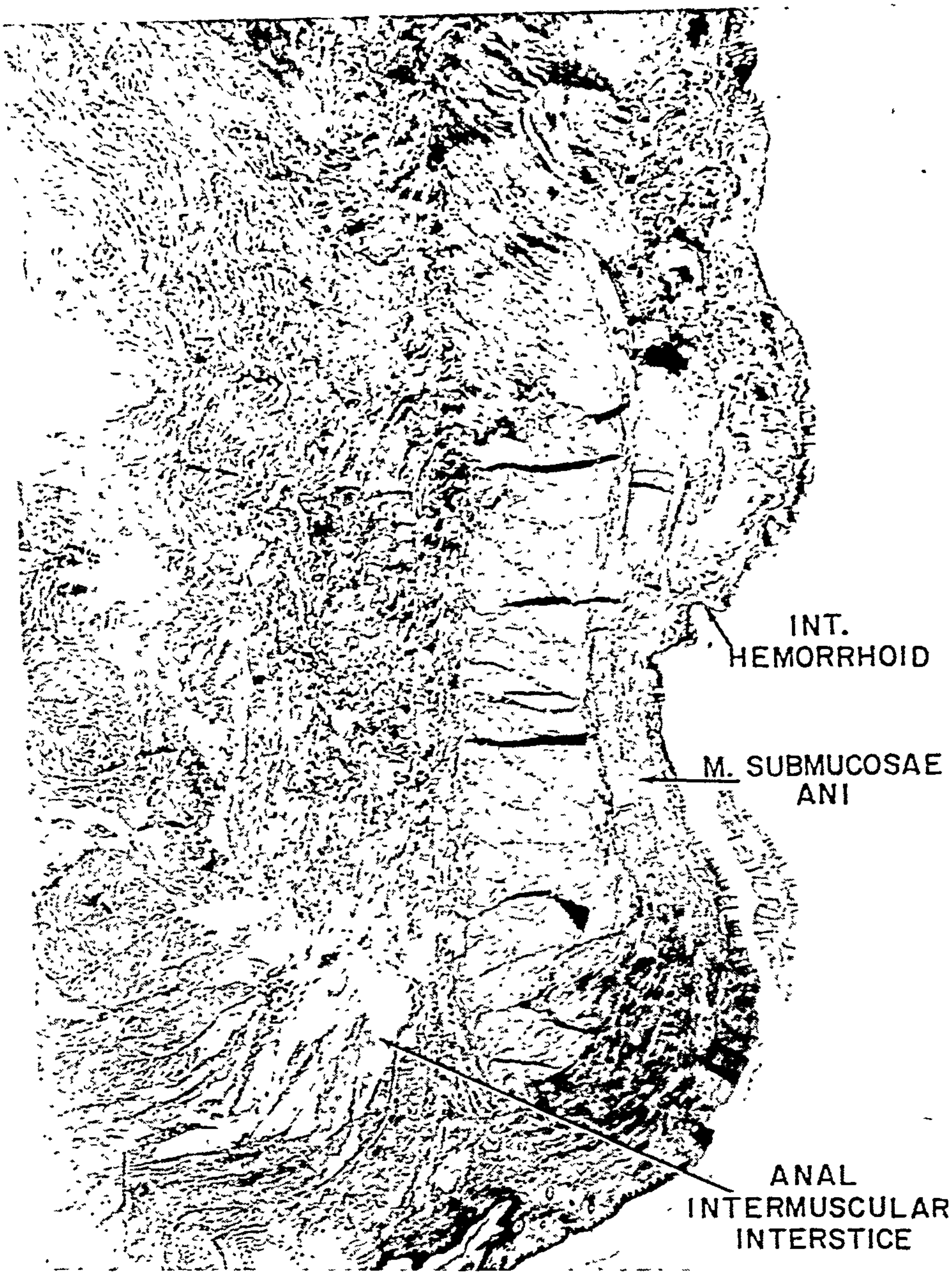

Fig. 16.—Sagittal section (adult), showing relation of internal hemorrhoid to underlying muscularis submucosae ani. Note also attachment of muscularis submucosae ani to terminal internal sphincter.

placed tracts the practice of carrying the fistulectomy through the sphincter muscles would appear unwise, since many of the muscle fibers are needlessly sacrificed during the procedure. When the dissection approaches the sphincter mechanism in such cases, the fistulectomy should terminate in a fistulotomy. I shall not enter into a discussion of the various alleged locations where the sphincter mechanism may be divided with the smallest loss of control, except to emphasize the fact that this is a composite anatomic and functional unit, and every effort should be made to preserve it as nearly intact as possible.

SUMMARY

The surgical anatomic character of the anorectal sphincter mechanism has been reinvestigated and is redescribed on the basis of histologic examination of the anorectal region.

It has been pointed out that, in addition to the muscles usually mentioned as constituting this composite structure, it is important to include the muscularis submucosae ani and the muscles at the anterior and posterior attachments of the sphincter mechanism.

The relation of the conjoined longitudinal muscle to the internal phincter, to the formation of the anal intermuscular septum and to the anal glands has been demonstrated. These fibroelastic submucosal fibers have been shown to form the substratum of internal hemorrhoids, and their probable role in the pathogenesis of these varicosities has been suggested.

The clinical importance of a previously undescribed interstitial space, the anal intermuscular interstice, along with the septum of the conjoined longitudinal muscle, coursing through the internal sphincter, is emphasized, especially with reference to the spread of anorectal suppuration and malignant disease. The anal intermuscular interstice may be regarded as the gateway to the perianal region and the ischioanal fossa.

The architecture of the anorectal sphincter mechanism is such that each sphincter muscle has its associated respective longitudinal muscle, providing an anatomic explanation for reciprocal innervation and the development of postoperative anal incontinence incident to fistulectomy operations. Preservation of the sphincter mechanism as a functional anatomic unit in fistulectomies has been stressed in order to prevent this avoidable iatrogenic postoperative sequela.

Author's Note: I should like to acknowledge the cooperation of Dr. Medrick Barbot of the department of pathology of Provident Hospital and Dr. Nancy Warner of the department of surgical pathology, University of Chicago Clinics, in providing the material used in this study. I am also indebted to Mrs. Maxine Mitchell and Mrs. Anne B. White for the histologic preparations.

ZUSAMMENFASSUNG

Die chirurgisch-anatomischen Eigenheiten des anorektalen Schliessmuskelmechanismus werden auf Grund histologischer Studien der Anorektalgegend einer neuen Untersuchung unterzogen.

Es wird darauf hingewiesen, dass es wichtig ist, ausser den Muskeln, die gewöhnlich als Elemente der Zusammensetzung dieses Gebildes erwähnt werden, auch die Muscularis submucosae ani und die Muskeln des vorderen und hinteren Ansatzes des Schliessmuskelmechanismus zu berücksichtigen.

Die Beziehungen der Muscularis submucosae ani zum inneren Schliessmuskel, zur Bildung des intermuskulären Septums des Afters und zu den Analdrüsen werden dargestellt.

Es hat sich gezeigt, dass diese submukösen fibroelastischen Fasern das Substrat innerer Hämorrhoiden bilden. Es wird angedeutet, welche Rolle sie wahrscheinlich in der Entstehung dieser Venenerweiterung spielen.

Die klinische Bedeutung eines bisher nicht beschriebenen interstitiellen Raumes, des intermuskulären Interstitiums, und der durch den inneren Schliessmuskel verlaufenden Septen der Muscularis submucosae ani wird hervorgehoben unter besonderer Berücksichtigung des Ausbreitungsweges von Eiterungen und bösartigen Erkrankungen der Anorektalgegend. Das anale intermuskuläre Interstitium kann als "Eingangspforte" zur Perianal-

gegend und zur Fossa ischioanalis angesehen werden.

Der anorektale Schliessapparat ist so aufgebaut, dass zu jedem Schliessmuskel ein entsprechender Längsmuskel gehört, womit eine anatomische Erklärung für die wechselseitige Innervierung und für die Entwicklung der nach Fisteloperationen vorkommenden Schlussunfähigkeit gegeben ist. Die Wichtigkeit der Erhaltung des Schliessmuskelmechanismus als funktionelle anatomische Einheit bei Fistelresektionen wird besonders hervorgehoben, wenn man das Auftreten solcher unnötigen postoperativen dem ärztlichen Eingriff zuzuschreibenden Folgezustände vermeiden will.

CONCLUSIONES

Las caracteristicas anatomoquirúrgicas del exfínter anal han sido estudiadas de nuevo especialmente sobre la base de exámenes histológicos de la región anorrectal.

Con esto se ha comprobado que, además de los músculos ya conocidos como componentes del complejo muscular exfinteriano, es preciso también incluir la muscularis mucosae del ano y las músculos de los ligamentos anterior y posterior del exfínter.

Ha sido demostrado la relación entre la muscularis mucosae del ano y el exfínter interno con el septum intramuscular y con las glándulas.

Estas fibras submucosas fibroelásticas parecen ser el substractum de a las hemorroides internas y esto sugiere a la posibilidad de su papel en la patogenia de estas varicosidades.

Se ha llamado la atención sobre la importancia clínica del espacio intersticial, no descrito hasta ahora, que juntamente con los septums de la muscularis submucosa del ano cursan a través del exfínter intrno y con especial referencia a la propagación de las supuraciones anorrectales y de los tumores malignos.

La arquitectura del exfínter anorrectal es tal que el músculo exfínter tiene su músculo longitudinal asociado, lo que constituye una explicación anatómica de la inervación recíproca en la presentación de incontinencia anal consecutiva a las fistulotomías. La conservación de este mecanismo exfinteriano se considera de lo más importante para prevenir esta secuela, evitable, de la fistulotomía.

RÉSUMÉ

L'étude du caractère anatomique du mécanisme sphinctérien anorectal a été reprise du point de vue chirurgical sur la base d'examens histologiques.

Il a étè mis en évidence qu'en plus des muscles habituellement mentionnés constituant cette structure composite, il est important d'inclure la tunique musculaire ainsi que les muscles des attaches antérieures et postérieures du mécanisme sphinctérien.

Les relations entre la tunique musculaire anale avec le sphincter interne, la formation de la cloison anale intermusculaire et les glandes anales sont démontrées.

Il a été mis en évidence que ces fibres fibro-élastiques sousmuqueuses forment le substratum des hémorroïdes internes, et il leur a été attribué un rôle probable dans la pathogénèse de ces varicosités.

L'importance clinque d'un espace interstitiel non décrit encore—l'interstice intermusculaire anal—avec les cloisons musculaires sous-muqueuses parcourant le sphincter interne est soulignée, particulièrement ence qui concerne l'extension d'une suppuration anorectale et les affections malignes. L'espace intermusculaire peut être considéré comme la porte d'entrée de la région périanale et de la fosse ischio-anale.

La structure du sphincter anorectal est telle que chaque muscle sphinctérien pos-

sède son muscle longitudinal respectif, ce qui fournit une explication anatomique à l'innervation réciproque et à l'apparition postopératoire de l'incontinence anale après fistulectomie. L'auteur insiste sur la préservation du mécanisme sphinctérien en tant qu'unité fonctionnelle anatomique lors de fistulectomie, séquelle iatrogen évitable.

RIASSUNTO

E' stato ristudiato il carattere anatomo-chirurgico del meccanismo dello sfintere anorettale in base ad esami istologici della regione anorettale. Si é dimostrato che, oltre ai muscoli noti che compongono questo complesso apparato, é necessario includere la muscularis mucosae dell'ano e i muscoli che si trovano in corrispondenza della parte anteriore e posteriore dello sfintere.

E' stato dimostrato un rapporto fra la muscolaris mucosae dell'ano e lo sfintere interno, il setto intermuscolare e le ghiandole anali. Queste fibre fibroelastiche submucose formano il substrato delle emorroidi interne e probabilmente hanno importanza nella patogenesi di tale affezione.

Viene messa in luce l'importanza clinica di uno spazio interstiziale, fino ad ora mai descritto, denominato interstizio anale intermuscolare, che ha uno speciale interesse nella diffusione delle suppurazioni anorettali e dei carcinomi. Questo interstizio deve essere riguardato come una via di passaggio alla regione perianale e alla fossa ischiorettale. L'architettura dello sfintere anorettale é cosiffatta che ad ogni muscolo sfinterico corrisponde un rispettivo muscolo logitudinale, associato ad esso, e ció spiega anatomicamente la innervazione reciproca e la comparsa dell'incontinenza anale post-operatoria dopo interventi di fistulectomia. E' molto importante, in tali operazioni, rispettare il meccanismo sfinterico, come unitá anatomo-funzionale, onde evitare questa temibile complicazione.

SUMARIO

As caracteristicas anatomicas do esfincter anoretal foram reinvestigadas e seu mecanismo considerado na base do esame histologico da região anoretal.

Establece que, alem dos musculos usualmente citados e importante incluir o musculo submucosa do anus e os musculos da inserção anterior e posterior do mecanismo esfincteriano. Demonstra as relações entre o musculo sub-mucoso e o esfincter interno para formação do septo anal intermuscular e as glandulas anais. Essas fibras submucosas fibrolasticas entram na formação do substratum das hemorroidas internas e assumem provavel papel na patogenese dessas varises. Esse espaço intersticial ainda não descrito—intersticio intermuscular—tem sido salientado especialmente com referência a difusão de supurações anoretais e neoplasias malignas. Considera o intersticio como uma porta de comunicação entre a região perianal e a fossa isquioanal. A arquitectura do esfincter anoretal é tal que cada musculo esfincteriano tem um conjugado muscular longitudinal, trazendo uma explicação anatomica para a inervação reciproca e o aparecimento de incontinencia nas fistulectomias. Essa sequela deve ser prevenida no curso das fistulectomias.

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The Publications Committee and Editorial Board

of the

Journal of the International College of Surgeons

have the honor to announce that

with this issue

Philip Thorek, M.D., F.A.C.S., F.I.C.S.

has assumed the duties of Editor-in-Chief of the Journal and Bulletin

Dr. Thorek succeeds his father, the late deeply lamented Dr. Max Thorek, Editor of the College publications since their inception.

Splenectomy for Myelofibrosis

ALFRED HAAS, M.D., F.I.C.S., AND GEORGE ROSENOW, M.D.

NEW YORK CITY, NEW YORK

THE concept of the syndrome characterized by splenomegaly, osteomyelofibrosis, hypoplasia of the bone marrow and a leukoerythroblastic blood picture (also called by many other names, e. g., chronic nonleukemic myelosis, agnogenic myeloid metaplasia and leukoerythroblastic anemia) has greatly changed in the last decade.

The case here presented, illustrates some practically important diagnostic, therapeutic and prognostic features of a still somewhat controversial condition.

A case is reported in which an enlarged painful spleen was removed and the diagnosis of chronic myeloid leukemia was made on the basis of microscopic examination of the spleen and biopsy of the liver. Almost five years later this diagnosis had to be revised. Examinations of the marrow from various sites, roentgen studies of bones and bone biopsy established the fact that the patient had never had leukemia but had myeloid metaplasia of the spleen and myelofibrosis.

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The patient had been given a high protein, high carbohydrate, moderate fat diet, vitamins and rest. He discontinued his visits to the hospital clinic on June 9, 1954. One week later he was first seen by one of us (A. H.). He complained at that time of pain in the region of the gallbladder and still more pronounced pain over the left side of the abdomen. These "gas pains" were extremely severe, at that time barely tolerable.

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Abdomen: The liver, somewhat harder than normal, was palpable 3 fingerbreadths below the costal margin. The spleen was large and firm, reaching down to the umbilicus. On auscultation an extensive friction rub was heard over the splenic region. An abdominal flat film showed a solitary stone, about the size of a pigeon's egg, in the gallbladder.

For further observation and workup the patient was then admitted to Misericordia Hospital. The first blood count there revealed 3,220,000 erythrocytes and 10,250 leukocytes per cubic millimeter, with 11.8 Gm. of hemoglobin and a differential count of 63 per cent polymorphonuclear neutrophils, 31 per cent lymphocytes, 5 per cent monocytes, 1 per cent basophils and 405,000 platelets. The value for cholesterol was 188 mg. and that for serum bilirubin 2.4 mg. per hundred cubic centimeters. The icterus index was 14.7. In a fragility test, hemolysis started at 0.44 and was completed at 0.26.

Because of the gallbladder complaints and the tentative diagnosis of cirrhosis of the liver, it was decided to remove the gallbladder and to inspect the liver and examine it by biopsy. The nature of the splenomegaly was at that time not clear; the possibility of a relation to the suspected hepatic cirrhosis (precirrhotic enlargement of the spleen) was considered.

On June 30 cholecystectomy was performed. The gallbladder contained a solitary stone. The common duct was normal. The pancreas was without palpable induration. The liver was smooth, with no visible signs of cirrhosis. A liver biopsy specimen was taken from the gallbladder bed. A decision was made to remove the large perisplenitic spleen, which obviously caused great pain. There were many adhesions, but splenectomy was performed without difficulty in the usual manner. The spleen measured 34 by 12 by 14 cm.

The spleen and the biopsy material from the liver were sent to Dr. Paltauf (Misericordia Hospital, New York City) and material from the spleen to Dr. Neubuerger (General Rose Memorial Hospital, Denver, Colorado). The reports read as follows (only the pertinent contents are given):

Dr. Neubuerger: "The pattern of the spleen is obliterated. Only a limited number of small inconspicuous follicles are seen in several places; they are composed of apparently

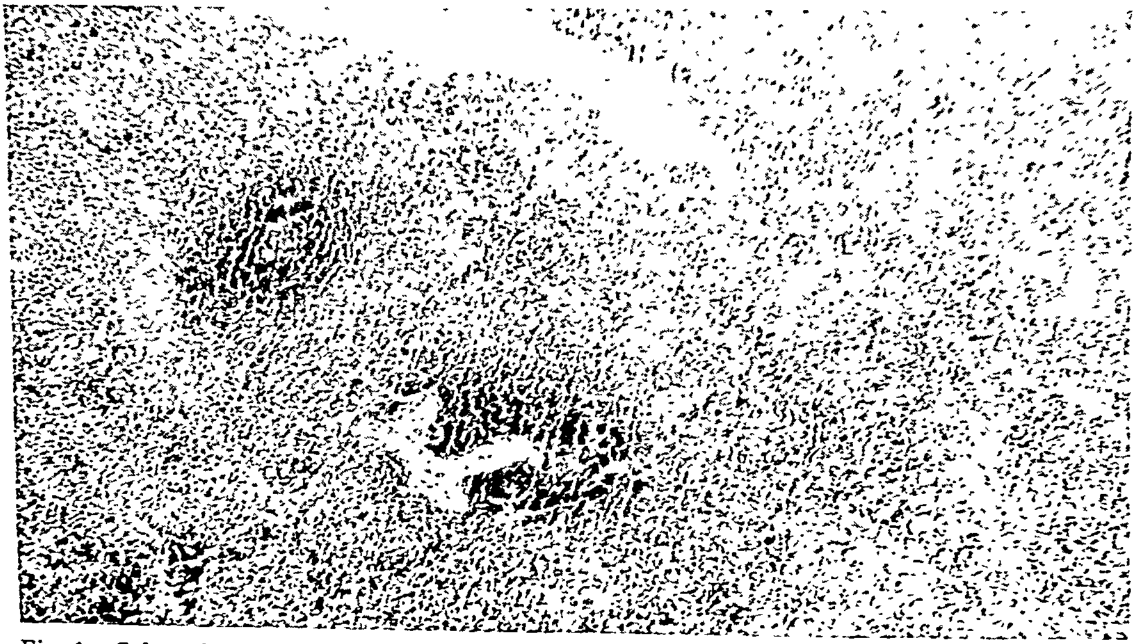

Fig. 1.—Spleen, low power (× 75). Normal splenic structure almost totally obliterated. Only a few small follicles are visible.

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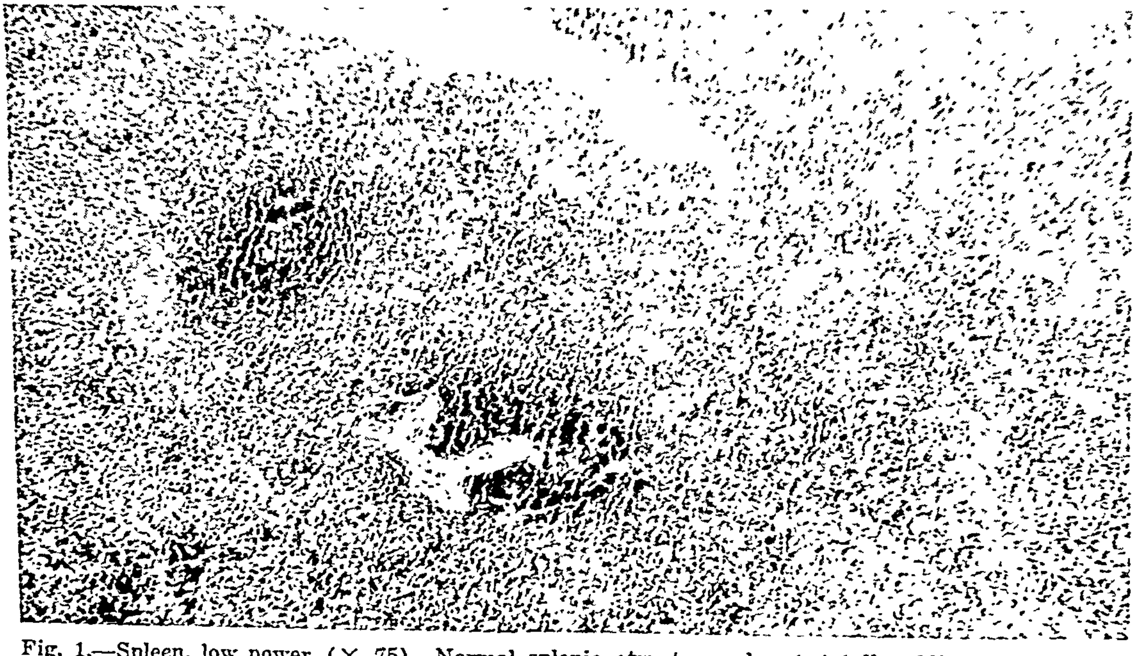

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At the same time definite anemia was observed. The value for hemoglobin was 68 per cent. There were 3,320,000 erythrocytes and 15,000 leukocytes per cubic millimeter, with 1 per cent myelocytes in the peripheral blood. Urobilinogen in the urine showed a pronounced increase.

The blood chemical data were then followed in the office up to the time of writing.

During the entire period there was always moderate to marked anemia: (July 7, 1955: erythrocytes, 2,900,000 per cubic millimeter of blood, with 10.8 Gm. of hemoglobin; leukocytes, 20,800 per cubic millimeter.) The number of platelets was constant at 350,000 to 400,000, and on one occasion (March 28, 1956) much higher (780,000). The blood smears always showed, during these years, a great number of nucleated red cells. Finally (January 1958), with the diagnosis still uncertain, the patient was referred to Dr. Rosenow. His observations and opinion follow:

When the patient was examined (more than three and one-half years after removal of the spleen) it was already apparent that the diagnosis of chronic myeloid leukemia, based on histologic studies of the spleen and liver tissues, had to be revised. The good general condition of the patient, after such a long period, was sufficient reason for that.

The numerous blood counts from 1954 to 1959 showed a constant tendency to subnormal values for hemoglobin and erythrocyte count and a pronounced increase in the number of white cells. Two illustrative examples are as follows. April 30, 1955: erythrocytes, 3,480,000 per cubic millimeter of blood; with 11.1 Gm. of hemoglobin; leukocytes, 19,050 per cubic millimeter, with a differential count of 62 per cent polymorphonuclear neutrophils, 27 per cent lymphocytes, 6 per cent monocytes and 5 per cent eosinophils. June 19, 1958: erythrocytes, 3,060,000 per cubic millimeter of blood, with 10.3 Gm. of hemoglobin; leukocytes, 35,000 per cubic millimeter, with 58 per cent polymorphonuclear neutrophils, 38 per cent lymphocytes and 4 per cent eosinophils.

A count made on Feb. 1, 1958 (A. H.) gave

Fig. 3.—Blood, (peripheral) oil immersion (× 1600). Numerous normoblasts, one myelocyte and several Howell-Jolly bodies are visible in this field.

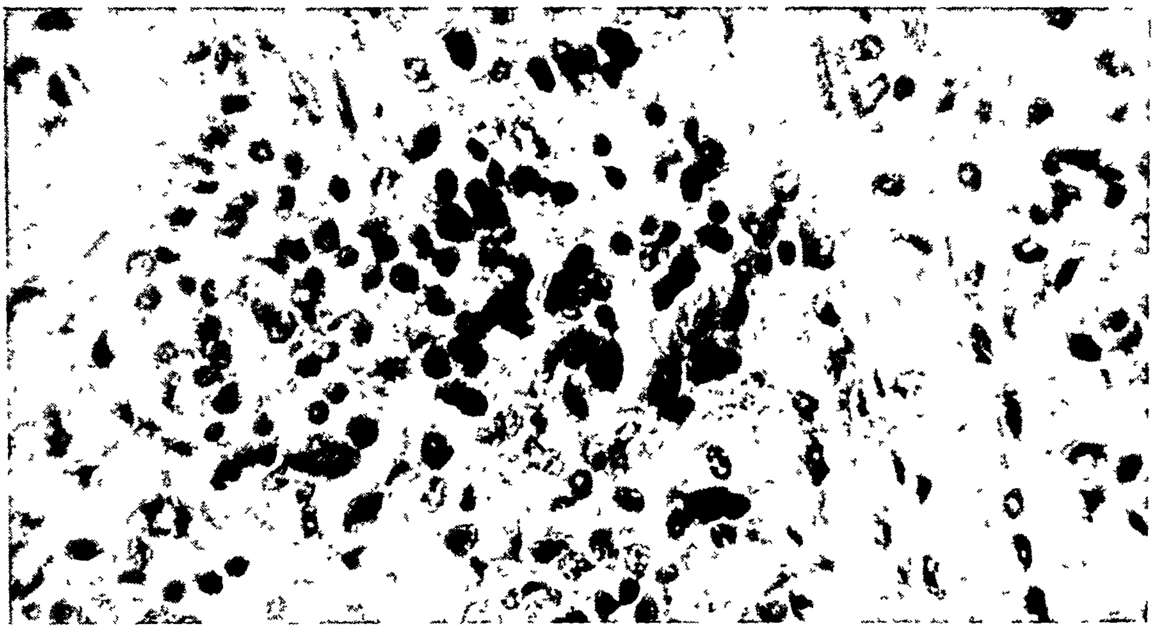

Fig. 2.—Spleen, high power (× 800). Red pulp is diffusely infiltrated with cells of myeloid series Many noimablosts ai e visible.

normal lymphocytes. Elsewhere there are no follicular structures. The red pulp is diffusely but rather unevenly infiltrated with pathologic cells. Most of these are large and have poorly defined, pink granular cytoplasm. Syncytial structures are frequent. In several spots the pathologic cells are quite densely packed and the nuclei have a tendency to be hyperchromatic. Other sections show a tendency to necrosis in the pathologic cell masses with loss of nuclear tangibility. It would appear that the pathologic cells are myelocytes or myeloblasts. Diagnosis: Hyperplasia, spleen, severe, myeloid leukemia" (See Figures 1 and 2.)

Dr. Paltauf: "The pulp of the spleen is congested and diffusely infiltrated with cells, which are apparently of myelogenous origin. The lymph follicles are small and contain few lymphoid elements. Sections of the liver show the normal architecture to be well preserved. In the periportal spaces and between the liver chords, infiltration by cells similar to those observed in the spleen are encountered. Diagnosis: Chronic cholecystitis; cholelithiasis; myelogenous leukemia of spleen? myelogenous leukemia of liver?"

The postoperative course was uneventful. Nevertheless, in view of the reports of the pathologists, deep concern arose, since splenectomy performed in the presence of myeloid leukemia has been disatrous in the majority of cases. Consequently it was expected that the patient would go downhill rapidly. Surprisingly, nothing of that kind happened. He continued to be well, resumed his work and at the time of writing (five years after removal of the spleen) is in fairly good health.

As the clinical course was clearly not consistent with the histologic diagnosis of leukemia, it appeared necessary to confirm or rule out this diagnosis in other ways, particularly by examination of the bone marrow. Unfortunately, this diagnostic test was not done prior to the operation.

Four months later (Oct. 11, 1954) a puncture aspiration of the sternal marrow showed a cellular hyperplastic marrow with normal distribution of nucleated white cells and an inversed red cell ratio amounting up to 60 per cent of all nucleated cells (Dr. J. Gudeman.). "The inverse ratio together with the enormous amount of nucleated red cells in the peripheral bloodstream and a marked increase in reticulocytes (up to 10 per cent) indicated a severe hemolytic process. Since the result of Coombs' test was negative, it was believed that an immunologic factor could be excluded."

At the same time definite anemia was observed. The value for hemoglobin was 68 per cent. There were 3,320,000 erythrocytes and 15,000 leukocytes per cubic millimeter, with 1 per cent myelocytes in the peripheral blood. Urobilinogen in the urine showed a pronounced increase.

The blood chemical data were then followed in the office up to the time of writing.

During the entire period there was always moderate to marked anemia: (July 7, 1955: erythrocytes, 2,900,000 per cubic millimeter of blood, with 10.8 Gm. of hemoglobin; leukocytes, 20,800 per cubic millimeter.) The number of platelets was constant at 350,000 to 400,000, and on one occasion (March 28, 1956) much higher (780,000). The blood smears always showed, during these years, a great number of nucleated red cells. Finally (January 1958), with the diagnosis still uncertain, the patient was referred to Dr. Rosenow. His observations and opinion follow:

When the patient was examined (more than three and one-half years after removal of the spleen) it was already apparent that the diagnosis of chronic myeloid leukemia, based on histologic studies of the spleen and liver tissues, had to be revised. The good general condition of the patient, after such a long period, was sufficient reason for that.

The numerous blood counts from 1954 to 1959 showed a constant tendency to subnormal values for hemoglobin and erythrocyte count and a pronounced increase in the number of white cells. Two illustrative examples are as follows. April 30, 1955: erythrocytes, 3,480,000 per cubic millimeter of blood; with 11.1 Gm. of hemoglobin; leukocytes, 19,050 per cubic millimeter, with a differential count of 62 per cent polymorphonuclear neutrophils, 27 per cent lymphocytes, 6 per cent monocytes and 5 per cent eosinophils. June 19, 1958: erythrocytes, 3,060,000 per cubic millimeter of blood, with 10.3 Gm. of hemoglobin; leukocytes, 35,000 per cubic millimeter, with 58 per cent polymorphonuclear neutrophils, 38 per cent lymphocytes and 4 per cent eosinophils.

A count made on Feb. 1, 1958 (A. H.) gave

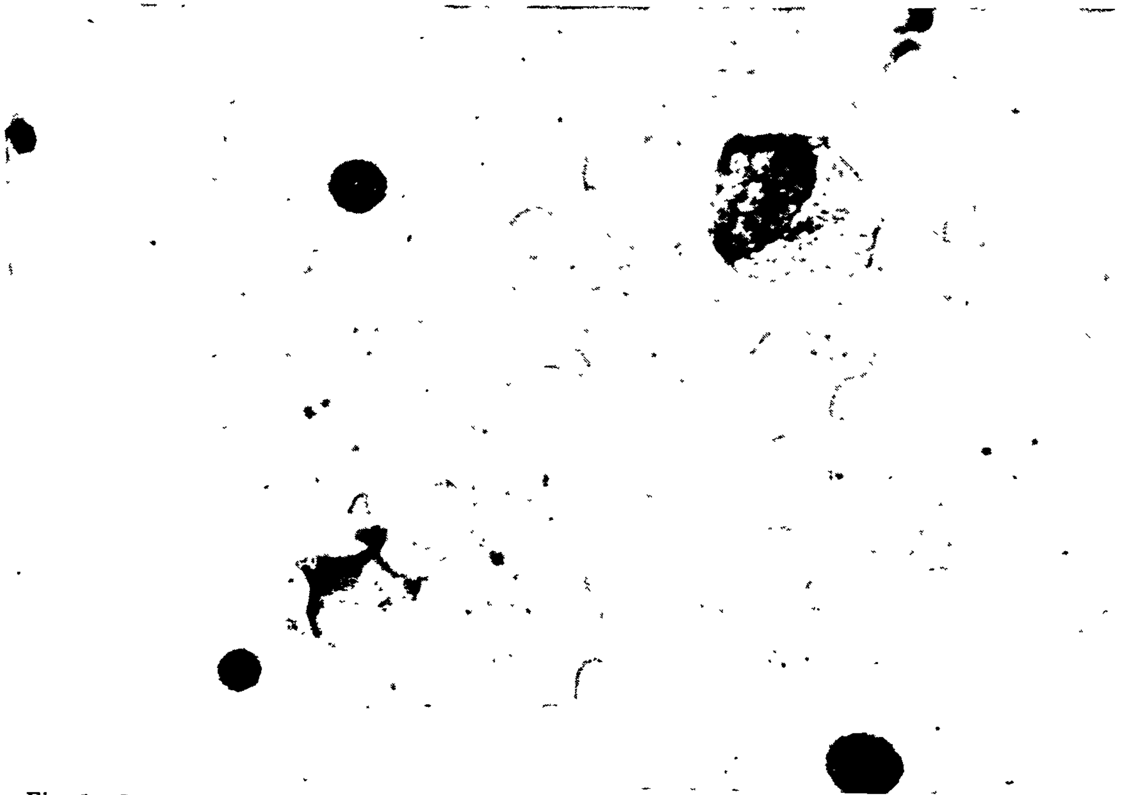

Fig. 3.—Blood, (peripheral) oil immersion (× 1600). Numerous normoblasts, one myelocyte and several Howell-Jolly bodies are visible in this field.

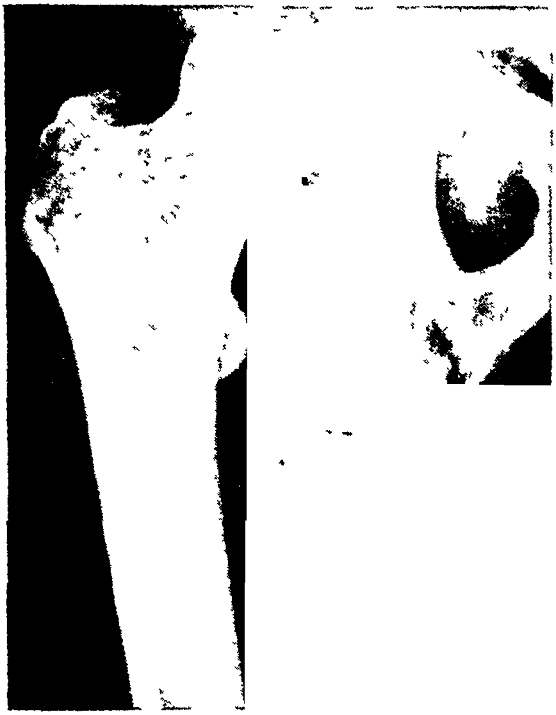

Fig. 4.—Upper third of right femur shows markedly thickened corticalis and osteofibrosis.

similar results: hemoglobin 9.3 Gm.; leukocytes, 30,000 per cubic millimeter of blood, with 55.5 per cent polymorphonuclear neutrophils, 4 per cent myelocytes, 32 per cent lymphocytes, 6.5 per cent monocytes and 1.5 per cent basophils. Most conspicuous was the large number of nucleated red cells, 309 nucleated red cells to 200 white cells. Almost all of these cells were normoblasts; a few pronormoblasts were observed. The corrected white cell count was therefore much lower, namely, 14,000 per cubic millimeter.

The morphologic character of the non-nucleated cells was abnormal. There was marked anisocytosis, with a number of spherocytes and a moderate degree of poikilocytosis with typical teardrop forms. Many of the erythrocytes were target cells, and a great percentage had basophilic stippling. Howell-Jolly bodies were observed in many erythrocytes (Fig. 3).

Attempts by one of us (A. H.) to aspirate bone marrow from both iliac crests yielded only a scanty amount of material, with few cells, insufficient for differentiation. The iliac bones were extremely hard. Sternal puncture, however, was easy, and ample material was obtained. The sternal marrow was cellular, with decidely increased erythropoiesis. The white series were normal; megakaryocytes were present in normal numbers. These observations of the marrow were strongly suggestive, *per se*, of myelofibrosis of the iliac bones.

This was substantiated by roentgenograms of the skeleton which showed marked osteofibrotic (sclerotic) changes in many bones, particularly the upper halves of both femurs, the bodies of the lumbar vertebrae and the iliac bones (Figs. 4 and 5). The definite anatomic evidence of osteofibrosis was finally provided by a specimen taken from the right iliac bone for biopsy (Fig. 6).

COMMENT

The aforementioned observations are evidence that the patient has, at present, myelofibrosis. Severe anemia, pronounced erythroblastosis in the blood and bone marrow and leukocytosis, with a shift to the left, are some of the prominent clinical features. Undoubtedly, the interpretation of the tissue change in the spleen and liver as diagnostic of chronic myeloid leukemia was *erroneous*.

Differentiation between myeloid leukemia and myeloid metaplasia, based solely on the study of microscopic sections, is extremely difficult and can even be impossible. The histologic data must be supplemented by examination of the blood and marrow. In the case here presented no signs of leukemia could be detected in either

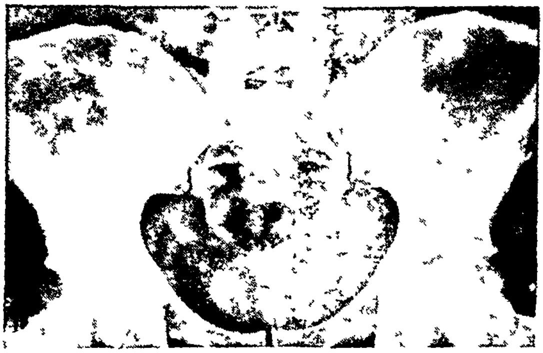

Fig. 5.—Iliac bones show increased spotty density, indicating osteofibrotic foci.

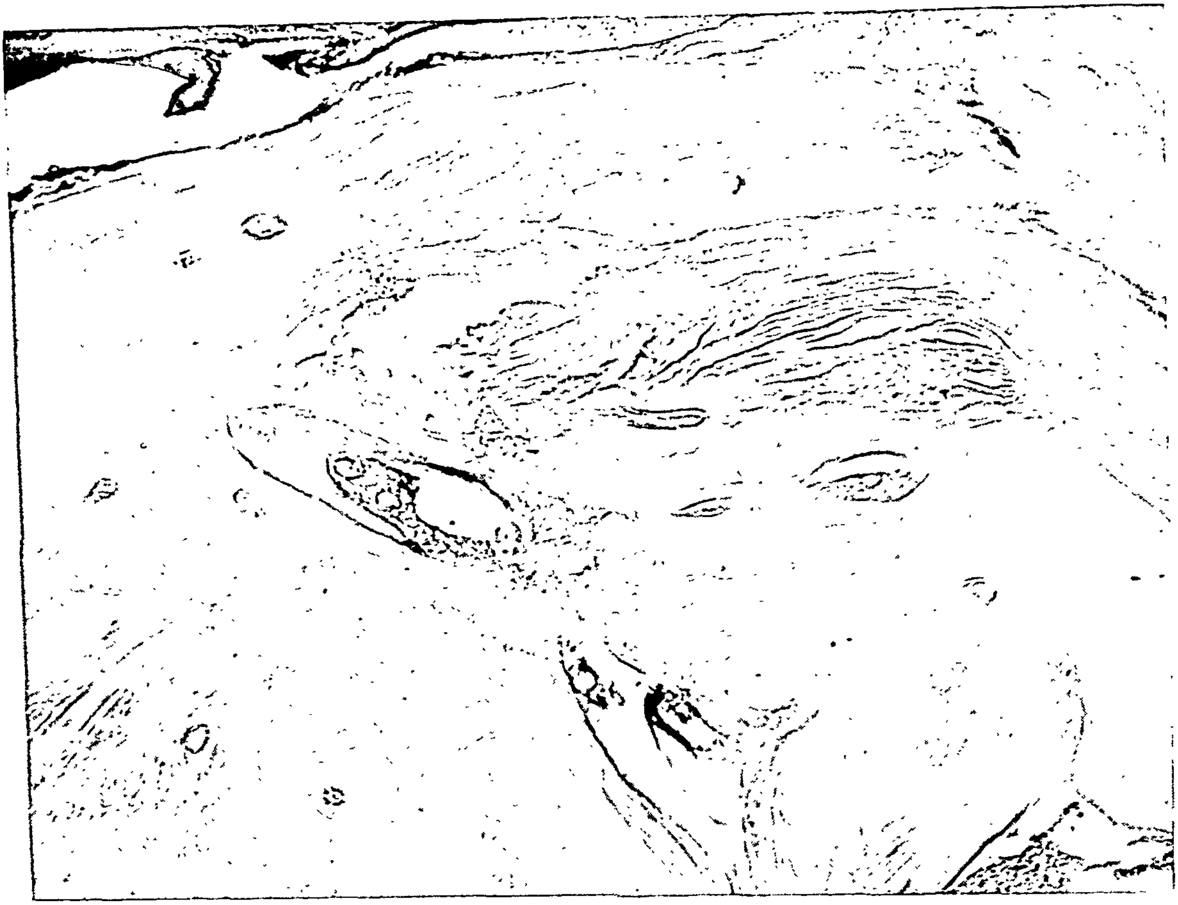

Fig. 6.—Iliac bone biopsy specimen, low power (× 75). Note spotty increase of fibrotic tissue and small islands of bone marrow.

blood or bone marrow at any time after splenectomy. It appears reasonable to assume that myelofibrosis already existed at that time (i. e., about five years ago), although no roentgen examination of the bones was made before splenectomy or soon thereafter.*

The relation of myelofibrosis to myeloid metaplasia of the spleen has undergone thorough revision and reappraisal in the past ten years. Formerly, the prevalent opinion was that metaplasia of the spleen was secondary to myelofibrosis (or sclerosis) of the bone marrow. The myeloid metaplastic spleen was regarded as compensatory and as substituting for the deficient bone marrow. On the basis of such an assumption it appeared neither rational nor permissible to remove the spleen or to try to reduce its size by roentgen irradiation. Even modern text books on hematology stress this point of view. Whitby and Britton[1] expressed the opinion of many others when they wrote: "Splenectomy (i. e., in myeloid metaplasia) is valueless and usually fatal, as the enlargement of the spleen is compensatory and this organ is usually an important site of hematopoiesis." The concept expressed by Whitby is no longer generally accepted. The reasons are clinical as well as anatomic. An important clinical point against the "substitution" theory is the fact that patients with the syndrome in question survived splenectomy. Moreover, quite a number of these patients have actually been benefited by removal of the myeloid *metaplastic* spleen. Green, Conley and others[2] in a recent review of the literature and five cases of their own, conclude that splenectomy has no disastrous effects in these cases. Others, more recently Videbaek[3] and Dameshek,[4] have expressed analogous opinions.

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*The patient provided a roentgen film of the pelvis taken about twelve years earlier. No osseous changes are visible on this film.

Currently the syndrome of myeloid metaplasia of the spleen is considered a parallel manifestation of generalized myeloproliferative disorder (Dameshek,[5] Rohr,[6] Andreasen,[7] Fresen[8] and many others). Splenectomy for patients with the syndrome in question is no longer rejected summarily. Indications for the operation must be weighed carefully. Important points in favor of removal of the spleen are marked hemolysis or enlargement of the organ to such an extent that it causes mechanical difficulties, e.g. pressure symptoms as cited by Oechslin.[9] The peripheral "leukemoid" blood picture may be similar in both conditions.

In the presence of either condition, splenomegaly is a leading sign. The size of the spleen has no significance in differential diagnosis. Extremely large spleens are observed in patients with chronic myeloid leukemia and in those with myeloid metaplasia. On the other hand, leukemia with no enlargement or only slight enlargement of the spleen, is not too rare. Aspiration biopsy of the spleen will be of no great help in the differential diagnosis between leukemia and myeloid metaplasia.

Retrospectively, it is not easy to classify the case here described. No changes in the peripheral blood were reported prior to the operative procedure. Although neutrophilic leukocytosis is almost regularly observed after splenectomy (regardless of the underlying condition), the appearance of such great numbers of nucleated blood cells in the peripheral blood as was observed in our patient is uncommon.

The case shows clearly that the diagnosis between myeloid leukemia and myeloid metaplasia can be easily missed. Roentgen examination of the bones is not always helpful; early myelofibrotic foci may not show up on the films. Even more important is the fact that the myelofibrotic changes are unevenly distributed through the osseous system. Anatomic studies on extensive material have demonstrated that the early, spotty myelofibrotic tissue alterations start in the bones of the pelvis and the extremities; only at a later stage do the more central parts of the skeleton become involved in the process.[7] Other studies,[9] which have shown that osteomyelofibrosis is more pronounced in the iliac bones than in the sternum, have practical implications. They have shown the reason why puncture aspiration of the marrow solely from one site may be misleading. If only sternal puncture is performed the diagnosis of myelofibrosis can be easily missed. This happened in our case. When (shortly after splenectomy) a sternal marrow examination was done, no hint of myelosclerosis was detected. The sternal marrow was, at that time, highly cellular, and myelopoiesis and erythropoiesis at this site were very active. It is remarkable that almost 5 years later, cellular marrow was aspirated from the sternum again, whereas our repeated attempts to obtain marrow from the iliac crests were unsuccessful.

A few remarks should be made on the role of the spleen and the increased hemolysis in this case. It is doubtful whether the often loosely used term "hypersplenism" can be applied. One of the effects of splenectomy in the presence of hypersplenism is the decrease or disappearance of hemolytic manifestations. In our patient, removal of the spleen failed to accomplish this. The levels of serum bilirubin and urobilinogen were unaffected. They still show a decided increase.

Attempts to explain the underlying mechanism would be entirely speculative. We are forced to admit that the manifold features of this case cannot be brought under one common denominator.

ZUSAMMENFASSUNG

Es wird über einen Fall berichtet, bei dem eine schmerzhafte vergrösserte Milz entfernt und auf Grund der mikroskopischen Untersuchung der Milz und einer Probeexzision der Leber die Diagnose einer chronischen myeloischen Leukämie gestellt worden war. Fast fünf Jahre später musste diese Diagnose revidiert werden. Untersuchungen des Knochenmarks aus verschiedenen Gegenden, Röntgenaufnahmen und Probeexzisionen der Knochen ergaben, dass der Patient niemals eine Leukämie sondern eine myeloide Metaplasie der Milz und eine Myelofibrose hatte.

Die wichtigen diagnostischen Verfahren werden hervorgehoben. Ansaugungen des Knochenmarks sollten nicht auf das Brustbein beschränkt bleiben. Die veränderte Auffassung des Syndroms und seine praktische Bedeutung werden erörtert.

RÉSUMÉ

Il s'agit d'un cas d'extirpation d'une rate douloureuse et augmentée de volume, où le diagnostic de leucémie myéloïde chronique a été posé sur la base d'un examen microscopique de la rate et d'une biopsie du foie. Près de cinq ans plus tard ce diagnostic a dû être revisé. Des examens de la moëlle à différents niveaux, des examens radiologiques osseux et des biopsies osseuses ont établi que le malade n'avait jamais eu de leucémie mais qu'il s'agissait d'un processus métaplasique myéloïde de la rate et de myélofibrose.

L'importance des techniques de diagnostic est soulignée. Les prélèvements de moëlle ne devraient pas être limités au sternum. La conception modifiée du syndrome, ainsi que ses conséquences pratiques sont discutées.

RESUMEN

Se trata del caso de un bazo voluminoso y doloroso en el que se hizo el diagnóstico de leucemia mieloide crónica sobre la base del examen microscáopico de la pieza operatoria y de la biopsia del hígado. Casi cinco años después este diagnóstico previo fué rectificado tras varios exámenes de la médula ósea tomada en varios sitios, el estudio radiológico de los huesos y la biopsia ósea, pudiéndose demostrar que el enfermo no había sufrido una leucemia sino una metaplasia mieloide del bazo y una mielofibrosis. Se resalta la importancia de los métodos de diagnóstico. La toma de tejido medular no debe limitarse al esternón. Finalmente el autor examina el concepto cambiado de este síndrome y sus aplicaciones prácticas.

SUMARIO

Comunicam um caso de esplenomegalia com resecção cirurgica e o diagnostico de leucemia mieloide cronica, comprovação histologica e biopsia do figado. Revisão esses diagnostico cinco anos depois. Exames da medula e de varios sitios, radiologia do esqueleto e biopsia de ossos demonstraram que o paciente nunca teve leucemia porem uma metaplasia melóide do baço com mielofibrose. Salientam a importancia desses diagnosticos. As biopsias—aspiração so devem ser feitas no esterno—Discutem a modificação de conceitos da sindrome e as deduções praticas advindas.

REFERENCES

1. Whitby, L., and Britton, C.: Disorders of the Blood. New York: Grune and Stratton, 1953, p. 562.

2. Green, T.; Conley, L.; Ashburn, L., and

TABLE 1.—*Improvement with and without Laminectomy: Time Element*

First Study

With laminectomy	*Total No. of Patients*	*No. of Improved*	*Per Cent Improved*
1-12 hr.	97	15	16
12-24 hr.	86	12	14
24-48 hr.	36	10	28
48-72 hr.	22	6	27
3 days-1 wk.	63	9	14
1 wk.-1 mo.	125	25	20
1 mo.-3 mo.	70	6	9
3 mo.-6 mo.	37	5	14
6 mo.-1 yr.	26	3	12
Over 1 yr.	17	1	6
Total	579	92	16
Without laminectomy	279	80	29
Total	858		

Second Study

With laminectomy	*Total No. of Patients*	*No. of Improved*	*Per Cent Improved*
1-12 hr.	14	4	29
12-24 hr.	15	2	13
24-48 hr.	7	4	57
48-72 hr.	6	3	50
3 days-1 wk.	3	1	33
1 wk.-1 mo.	7	0	0
1 mo.3- mo.	5	2	40
3 mo.-6 mo.	4	0	0
6 mo.-1 yr.	3	0	0
Over 1 yr.	0	0	0
Total	64	16	25
Without laminectomy	25	15	60
Total	89		

Combined Study

With laminectomy	*Total No. of Patients*	*No. of Improved*	*Per Cent Improved*
1-12 hr.	111	19	17
12-24 hr.	101	14	14
24-48 hr.	43	14	33
48-72 hr.	28	9	32
3 days-1 wk.	66	10	15
1 wk.-1 mo.	132	25	19
1 mo.-3 mo.	75	8	11
3 mo.-6 mo.	41	5	12
6 mo.-1 yr.	29	3	10
Over 1 yr.	17	1	6
Total	643	108	17
Without laminectomy	304	95	31
Total	947		

were discharged walking without aids of any kind. The second study showed that none of the laminectomized and 8 per cent of the nonlaminectomized patients were discharged walking without aids of any kind. The combined study showed that 1 per cent of the laminectomized and 6 per cent of the nonlaminectomized patients were discharged walking without aids of any kind (Table 4).

Table 5 shows that 9 patients out of 89 are ambulatory with prosthetic aids. Four of the 9 had been laminectomized and could walk for short distances with prosthetic appliances, but for practical purposes wheelchairs were required. The remaining 5 patients had not been laminectomized; 2 could walk without aids of any kind, 1 could walk with 2 Canadian crutches and two short leg braces, and 2 could walk short distances (one with two canes, the other with a walker). For practical purposes, however, the 2 last mentioned required wheelchairs.

COMMENT

The results of the second, although smaller, study confirm those of the first study.

It is my opinion that the absence of block, in general, indicates that the neural structures are not being continuously seriously compressed, that maximum destruction has already occurred and that nothing is to be gained by laminectomy. The presence of a block, however, remains an indication for decompressive intervention, because it offers the patient some chance of improvement.

In both studies, patients with complete blocks and without laminectomy did not improve; only a relatively few of those with complete block, however, as a result of laminectomy; in other words, a number of patients with block have been laminectomized needlessly. This shows that no reliable method is available as yet for de-

TABLE 2.—*Improvement with and without Laminectomy: Vertebral Level*

	With Laminectomy			*Without Laminectomy*		
	No. of Patients	*No. Improved*	*Per Cent Improved*	*No. of Patients*	*No. Improved*	*Per Cent Improved*
			First Study			
Cervical	61	12	20	115	36	31
T 1-6	115	10	9	32	3	9
T 7-12	285	32	11	84	16	19
Lumbar	118	38	32	48	25	52
Total	579	92	16	279	80	29
			Second Study			
Cervical	24	10	42	17	13	76
T 1-6	7	1	14	1	0	0
T 7-12	21	2	6	4	1	25
Lumbar	12	3	25	3	1	33
Total	64	16	25	25	15	60
			Combined Study			
Cervical	85	22	26	132	49	37
T 1-6	122	11	9	33	3	9
T 7-12	306	34	11	88	17	19
Lumbar	130	41	31	51	26	50
Total	643	108	17	304	95	31

termining which patients with manometric block should not be laminectomized. The roentgen appearance of the vertebrae does not supply such a method. I have seen patients with excellent alignment and without neurologic improvement and others with improvement despite malalignment.

In my opinion a progressive neurologic deficit indicates laminectomy and a progressive neurologic recovery contraindicates it. Table 1 shows that laminectomy, when indicated, need not be done immediately in all cases. In the first study, some patients benefited by operation delayed up to one year. Laminectomy after more than one year, however, had no [illegible] value except when it was [illegible]

very early laminectomy reveal that there was "a sudden expulsion of the cord" when the dura was incised. The sudden release of pressure may have caused prolapse and destruction of what intact tracts may have remained after injury. 2. The physician can examine the patient thoroughly for other complications such as injury to internal organs, damage to the brain or osseous fracture. 3. The preparation of the patient for surgical treatment is improved by treating the systemic shock as against the spinal shock.

Although the literature contains reports of early laminectomy for [illegible] lesions without [illegible]

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TABLE 5.—*Statistics on Ambulatory Patients of Second Study*

Patients	*Vertebral Level*	*Neuro. at Onset*	*Block*	*Bladder Sensation*	*Bladder Control*	*Ambulation*
Laminectomy						
1. R.W.	T9	Comp.	?	Near normal	Near normal	2 C.C. (wheel chair)
2. D.W.	T12	Comp.	Yes	None	None	1 L.L. (wheel chair) 1 S.L. 2 canes
3. W.O.	L1	Comp.	Yes	None	None	1 L.L. (wheel chair) 1 S.L. 2 canes
4. P.P.	L3	Inc.	?	None	None	1 S.L. (wheel chair) 2 C.C.
No laminectomy						
1. R.G.	C	Comp.	No	Normal	Normal	No aids
2. C.P.	C	Comp.	No	Normal	Normal	No aids
3. W.H.	C	Comp.	No	Near normal	Near normal	2 canes (wheel chair)
4. R.H.	C	Comp.	No	Near normal	None	Walker (wheel chair)
5. R.G.	L4-5	Comp.	?	Near normal	None	2 C.C. 2 S.L.

because the life span of this type of patient is directly proportionate to the status of the urinary tract, assuming that all other systems are essentially normal.[5] Urologic considerations are more fully appreciated when one realizes that fewer than 10 per cent of patients with injuries to the spinal cord have normal or nearly normal vesical sensation or control.

Gross observations of the cord at operation did not provide a reliable criterion with regard to functional prognosis unless the cord had obviously been transected. Many patients with a "normal-appearing cord" did not improve at all, while others with subtotal lesions became somewhat better. The surgeon must be cautious, therefore, in discussing the prognosis for functional recovery.

Tract conducting tactile sensibility recovered most frequently. Recovery of pain and temperature sensation came next. Poorest was the return of motor function.

Although I [illegible] [illegible] [illegible] [illegible] [illegible] alike, and this is considered before a final decision is made for or against laminectomy. The age of the patient, the lapse of time since injury, the cause of injury, the roentgen, manometric and psychic factors and any coexistent complications are thoroughly studied.

ZUSAMMENFASSUNG

Der Verfasser berichtet über eine statistische Untersuchung des Wertes der Laminektomie bei der Behandlung von Kranken mit Ruckenmarksverletzungen. Er weist auf die hier bestehenden Meinungsverschiedenheiten hin und schlägt als Grundlage zur Bestimmung, ob eine Laminektomie angezeigt ist oder nicht, das Bestehen oder Fehlen einer manometrisch nachweisbaren Blockierung des Wirbelkanals vor.

Andere Ergebnisse [illegible] [illegible] [illegible] [illegible]

TABLE 3.—*Relation of Manometric Evaluations and Improvement*

	No. of Patients	*Number Improved*	*Per Cent Improved*
*First Study**			
Block			
Laminectomy	100	12	12
No laminectomy	25	0	0
No Block			
Laminectomy	21	6	29
No laminectory	106	40	38
Total	252	58	
*Second Study***			
Block			
Laminectomy	19	3	16
No laminectomy	2	0	0
No Block			
Laminectomy	3	3	100
No laminectomy	19	14	74
Total	43	20	
Combined Study†			
Block			
Laminectomy	119	15	13
No laminectomy	27	0	0
No Block			
Laminectomy	24	9	33
No laminectomy	125	54	43
Total	295	78	

*858 patients in study (252 manometric tests).

**89 patients in study (43 manometric tests).

†947 patients in study (295 manometric tests).

Scheibert has proposed that perhaps the mishap is not due to the operation but occurs during anesthesia when hyperextension is used for endotracheal intubation.[2] His suggestion that local anesthesia be used for cervical laminectomy therefore seems well founded.

Many patients arrive with a history of laminectomy performed while the patient was unconscious. The functional returns of these patients have not been remarkable; I cannot see the rationale of immediate laminectomy, therefore, in the presence of a state of unconsciousness.

One must not imply from the foregoing that time does not play a role. Once a decision has been reached to operate, the operation should be done immediately. Too often indications are based on emotions rather than on scientific facts. A familiar and frequently heard suggestion is, "If we're going to give this patient a chance to walk, he must have a laminectomy!" Yet, how many laminectomized patients ever walk (Tables 4 and 5)?

In the first study I concluded that functional return was greatest in patients with lumbar lesions, since injuries of the cauda equina are similar to peripheral nerve lesions. The second study, however, though admittedly smaller, indicates that more improvement occurred in the patients with cervical lesions. Perhaps this reversal of order of improvement can be explained by the fact that I was more critical in the second study, realizing that the functional return in patients with lumbar lesions, in most instances, was compatible with the very level of the injury. Table 5 shows that in the second study not a single patient with a lumbar lesion walked without the use of aids, whereas 2 patients with cervical lesions did. These data from the second study are even more emphasized by those of the first study, which showed that patients with cervical lesions (laminectomized as well as nonlaminectomized) were discharged without aids of any kind in more instances than were those with lumbar lesions.

Observation of patients who have undergone repeated laminectomies have not been rewarding so far as functional return is concerned. Repeated operations on lesions of the cauda equina, done in order to improve ambulation, can be dangerous; I have observed patients who lost normal sensation and control of the urinary bladder after the second intervention. Function of the bladder is highly important,

TABLE 4.—*Ambulation without Aids*

	With Laminectomy	*Without Laminectomy*
1st study	7/579, or 1%	16/279, or 6%
2nd study	0/ 64, or 0%	2/ 25, or 8%
Combined study	7/643, or 1%	18/304, or 6%

Bilateral Mastectomy for Carcinoma of the Breast

HENRY PATRICK LEIS, JR., M.D., F.A.C.S., F.I.C.S.

NEW YORK CITY, NEW YORK

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Reports by Park and Lees, McKinnon, and Phillips and Owchar seem to indicate that treatment has failed to make any impression on the mortality rate of mammary carcinoma. In recent articles Schwartz and Crile Jr. both point out that certain forms of treatment may even do harm by reducing host resistance. These reports would seem to support, at least in part, those who advocate total neglect, with reliance on the host resistance.

The type of surgical intervention advised goes from the extreme of limited surgical measures (simple mastectomy and postoperative radiotherapy as advocated by McWhirter) to the other extreme of extensive operation as advocated by Urban, who resects the internal mammary chain in continuity with the classic radical mastectomy, and the even more extensive surgical approach of Wangensteen, who dissects the neck, the internal mammary chain, and the mediastinum, [illegible]

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Read at the Twenty-Third Annual Congress of the United States and Canadian Sections, International College of Surgeons, Los Angeles, March [illegible].

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RÉSUMÉ

L'auteur présente une étude statistique sur la valeur de la laminectomie dans les lésions de la moëlle épinière. Il rappelle les divergences d'opinion dont elle fait l'objet, et propose une base de détermination pour son indication, constituée par la présence ou l'absence de blocage spinal manométrique.

Certaines caractéristiques ressortant de cette étude sont également présentées et commentées (statistiques sous forme de tableaux).

RESUMEN

El autor presenta un estudio estadístico del tratamiento de traumatismos de la médula espinal por la laminectomía. Señala que hay divergencias sobre este tratamiento, y toma como base, para indicar o no la laminectomía, la presencia o ausencia de bloqueo manométrico espinal.

SUMARIO

Apresenta uma estatistica do valor da laminectomia nas lesões da medula. Estabelece as diferenças de opinião e fornece as bases para determinar quando a laminectomia é ou não indicada, principamente em presença ou ausência de bloqueio manometrico.

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Many patients with high blood-pressure live for years entirely free from any symptoms of the disorder and discover it only by accident, when a physician examines them for some other ailment or after application for life insurance. If it were not for its complications, high blood-pressure in certain individuals might be quite desirable. Many powerful men of affairs have high blood-pressure, and their dynamic personalities seem to require a high pressure to maintain the tension under which they work. Unfortunately, however, Nature, who has presented these persons with the gift of power, demands her toll. As the years roll by, the arteries which have been constantly under the increased strain of the high pressure begin to thicken and then to harden, and in time the patient has a well-developed hardening of the arteries.

—*Major*

Obstetric and Gynecologic Surgery

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tients who answer rigid criteria of operability including the triple biopsies, of the mammary lesion, the internal mammary nodes and the axillary apical nodes.

An excellent report of the results of endocrine therapy (estrogens, androgens and cortisone) and endocrine surgery (oophorectomy, adrenalectomy and hypophysectomy) in producing remissions and thereby increasing the survival rate among patients with metastatic carcinoma of the breast has been given by Pearson and his associates. The use of chemotherapy and immunization in the treatment of mammary carcinoma has been discussed by Black and Speer and by Schwartz.

The results of radiotherapy for this lesion have been carefully studied and reported upon by Saugmann-Jensen and Jacoby, Lenz, Sanders and Pool, Haagensen, Harrington, Taylor and others. The consensus would seem to be that it has little or no value as a preoperative prophylactic measure and that it increases the survival rate only very slightly when used postoperatively in operable cases. It is palliative, however, and will increase survival time in the inoperable cases and in those in which the tumor has recurred after mastectomy.

Faced by these and other extremely varied opinions as to the proper method of treatment for carcinoma of the breast, many surgeons find themselves in a dilemma. The purpose of this paper is not to discuss the merits of these various forms of treatment but rather to present arguments in favor of one of the least widely accepted and most infrequently tried procedures in the struggle to increase the rate of cure and/or the period of survival, namely, prophylactic removal of the contralateral breast by simple mastectomy when the other is removed for carcinoma.

I have employed this technic concurrently with or after removal of the other breast by radical mastectomy in 15 cases of operable carcinoma. Bloodgood in 1921 and Pack in 1951 recommended this procedure. Hubbard in 1953 advised prophylactic simple mastectomy of the opposite breast for patients with operable carcinoma who (a) have a family history of mammary carcinoma or (b) are premenopausal and desire to become pregnant.

The cause of bilateral mammary carcinoma may be (1) a new primary malignant focus in the opposite breast or (2) a lymphatic spread to the second breast from the first. In addition, bilateral carcinoma of the breast may be (1) simultaneous (occurring in both breasts at the same time) or (2) nonsimultaneous (occurring in the second breast at a later date).

Statistics on the incidence of bilateral mammary carcinoma are variable, and pathologists vary as regards criteria for detecting primary or metastatic carcinoma in the second breast. In reviewing many series, however, one is impressed with the fact that the average incidence of bilateral carcinoma of the breast is about 7.5 to 10 per cent. This certainly is most significant, whether the carcinoma in the second breast is primary or metastatic or whether it is simultaneous or nonsimultaneous.

Pack reported that carcinoma of the contralateral breast developed subsequently in 7.5 per cent of the patients in several series. Trevor estimated the incidence of bilateral mammary carcinoma at 8 to 10 per cent; McGill, at 7.5 to 10 per cent. Fitts and Patterson reported a series in which 1.8 per cent of the patients had simultaneous and 5.7 per cent nonsimultaneous bilateral carcinoma, a total of 7.5 per cent. Chase stated that in 2 per cent of cases the tumor is bilateral initially and will become bilateral in 5 per cent, a total of 7 per cent. In a series of 275 consecutive patients with microscopically proved carcinoma of the breast reported by Hubbard, 3 (1.09 per cent) had simultaneous bilateral. Of the remaining 272, 17, or 6.2 per cent, subsequently had microscopically proved carcinoma in the other breast and clinically apparent but unbiopsied carcinoma of the opposite breast developed in 12, or 4.4 per cent, a total of 10.6 per cent. The incidence of combined simultaneous and nonsimultaneous bilateral mammary carcinoma in the 275 cases was 11.6 per cent. Harrington, in reviewing 6,558 cases, recorded an incidence of 3.4 per cent for bilateral operable carcinoma and an equal percentage for inoperable lesions, a total of 6.8 per cent. Desaive reported an incidence of 3.2 per cent of metastatic carcinoma in the second breast; Hubbard, 4.4 per cent. Torok and Wittelshofer noted bilateral mammary carcinoma in 9 per cent, and Gross in 12.5 per cent, in their respective autopsy series. Lawson reported 100 consecutive autopsy records of women with carcinoma of the breast and pointed out that carcinoma of the second breast had occurred in more than 21 per cent.

The percentage of patients in whom carcinoma develops in the other breast would probably be still higher if the rate of cure following the initial operation were better. If only those women are considered who live long enough for carcinoma in the fellow breast to become manifest and be detected, i.e., Stage I lesions which have a prolonged survival rate, then the incidence is probably much higher than the average of 7.5 to 10 per cent given in the foregoing overall statistics.

The incidence of carcinoma developing in the remaining breast after the other has been removed for carcinoma is higher than in the population at large. Trevor stated that, after an initial mammary carcinoma has occurred, the chance that malignant change will take place in the other breast is more than doubled. He reports the incidence of this neoplasm [illegible] per cent, and that of carcinoma occurring in the remaining breast after removal of the first for malignant disease as 8 to 10 per cent. Hubbard reported an incidence of 5.8 cases per thousand cases of carcinoma of one breast in which nonsimultaneous carcinoma developed in the other breast, as compared with 0.84 cases per thousand in the population at large.

The multicentric origin of malignant tumors in certain organs and tissues, such as the colon, ovary, oral mucosa, skin, peripheral nerve sheaths and cartilage, is an accepted phenomenon. It is now known that this can occur in one or both breasts as well as in these other organs and tissues. The remaining breast may very well harbor an unsuspected carcinoma.

Pack stated that not infrequently in the removal of an apparently normal breast either in conjunction with or after removal of a carcinomatous opposite breast, an unsuspected focus of premalignant changes or early carcinoma is discovered in the second breast. In a series of 16 cases of prophylactic removal of the opposite asymptomatic breast in patients who had undergone mastectomy for carcinoma of the other breast, performed at the University of Minnesota Hospitals and reported by Hubbard, 2 patients were observed to have unsuspected carcinoma. I have had 2 such cases in 15 prophylactic removals of the second breast.

It has been shown anatomically by Gerota and Rouviere that the lymphatics of the skin of the two mammary regions are continuous across the midline. Oelsner demonstrated lymphatic collecting trunks extending from one mammary region to the supraclavicular region of the opposite side. In view of these transmammary lymphatic pathways, there can be little doubt that a varying percentage of mammary carcinomas will metastasize across the midline to the opposite skin, breast, axilla or supraclavicular areas.

In addition to the linking of the two breasts by these lymphatic pathways, they should be considered as an anatomic system rather than as separate and unrelated organs, because the same genetic and hormonal factors exist for both. By removing one breast for carcinoma one certainly does not remove the carcinogenic factors influential in producing the first lesion from exerting the same influence on the opposite breast. Except that local conditions in one breast may not be duplicated in the other, the same etiologic factors in the development of a malignant tumor in one breast are conceivably active in the opposite breast.

The removal of a contralateral paired organ such as the ovary, which is needed to serve an important function, is a routine procedure when the other ovary shows malignant change. Admittedly, no gross hormonal changes have so far been detected after bilateral mastectomv, but as Lawson has stated, there is much evidence to show that the breasts play a role in 17-ketosteroid metabolism. The remaining breast may exert a definite influence on those mammary carcinomas that are hormone-dependent. Bilateral oophorectomy is certainly a much more disturbing sexual mutilation than bilateral mastectomy, yet removal of the contralateral breast, which at best can only serve as a questionable badge of sexual enhancement and femininity, is not generally accepted.

The validity of prophylactic removal of the contralateral breast when the other has been removed for carcinoma is probably best supported by an increase in survival statistics for bilateral mastectomy as compared to unilateral. The prognosis for the simultaneous type of mammary carcinoma is not good. Fortunately, it is much less common than the nonsimultaneous. Harrington reported five-year survival in 61.5 per cent of cases of bilateral simultaneous mammary carcinoma in patients without axillary metastases but only 17.9 per cent for those with axillary metastases. In the more common nonsimultaneous group, however, the survival rate is better than in patients with unilateral carcinoma. Harrington, in reporting a series of 155 cases of nonsimultaneous bilateral carcinoma of the breast noted that the prognosis was better than in cases of the unilateral lesion. Cliffton and Young recorded the incidence of five-year survival in their series as 70 per cent for nonsimultaneous bilateral lesions, as compared to 54.9 per cent for unilateral carcinoma. Trevor stated that the five-year survival rate for the nonsimultaneous type frequently surpasses that for the unilateral type. Lawson, reporting a series of 32 bilateral mastectomies, observed that removal of the opposite breast materially improved the period of survival. He concluded that the mere presence of the remaining breast may deleteriously influence the course and progress of metastases.

Removal of the opposite breast by simple mastectomy in conjunction with or after a radical procedure for a carcinomatous first breast adds practically nothing to the postoperative mortality and morbidity rates, but it adds a great deal to the mental and physical comfort of the patient. Fear that carcinoma will develop in the remaining breast is removed. Symmetry is established, and with this the patient no longer feels unbalanced and has much greater ease in her dressing and movements. She is no longer forced to wear a prosthetic device, which at best is cumbersome and uncomfortable, in a hopeless attempt to match the remaining breast. Instead, she can wear a built-up strapless brassiere that often enhances, rather than detracts from, her appearance. The majority of the patients in my small series of 15 cases of prophylactic removal of the opposite breast by simple mastectomy had the second breast removed at a later date, rather than in conjunction with the radical procedure for the carcinomatous first breast. Because of this, they have an excellent basis for comparison. All are happier and more comfortable now than they were before removal of the second breast; in addition, 2 proved to have unsuspected carcinoma in the remaining breast. No other conclusions can be drawn at present, because of the small number of cases and the relatively short period of follow-up.

Despite arguments in favor of bilateral mastectomy, the procedure is poorly accepted by both physicians and patients. Only a few patients will accept prophylactic simple mastectomy of the contralateral breast at the time of planned radical mastectomy for carcinoma of the other breast, but a considerable number will accept it at a later date. Public education as to the advantages of bilateral mastectomy may increase the acceptance of this procedure and possibly provide a means of reducing the mortality rate associated with carcinoma of the breast.

ZUSAMMENFASSUNG

Fruhere und gegenwärtige Formen der Behandlung des Brustdrusenkrebses werden kurz besprochen, und Statistiken über doppelseitigen Brustdrüsenkrebs werden untersucht. Fernerhin werden die Gründe dargestellt, die zugunsten einer doppelseitigen Brustdrusenresektion sprechen, die moglicherweise zur Herabsetzung der Sterblichkeitsquote beim Brustdrüsenkrebs beitragen kann

RESUMEN

Se glosa brevemente el tratamiento del cáncer de mama en el pasado y en la actualidad, y se revisan estadísticas. Se argumenta la conveniencia de la mastectomía bilateral para reducir la alta mortalidad del cáncer de mama.

RÉSUMÉ

Bref exposé sur les traitements classiques et modernes du carcinome du sein: statistiques sur le carcinome bilatéral, et présentation d'arguments en faveur de la mastectomie bilatérale comme moyen possible de diminution du taux de mortalité dans cette affection.

SUMARIO

Discute brevemente a terapeutica passada e atual do carcinoma da mama, analiza a estatistica do ca. mamario bilateral com apresentação de argumentos em favor da mastectomia bilateral como meio de reduzir a mortalidade.

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For centuries the blood was thought to be a homogeneous red fluid filled with mysterious vital spirits. capable of much good and of equally great harm. So it was logical. perhaps. that some of the early natural philosophers injected this vital fluid into different animals just to see what would happen.

Samuel Pepys. the immortal author of Pepys's Diary. was one of those inquisitive souls interested in these experiments. Pepys owes his fame to his inimitable accounts of the people and events of his time. It should be stressed. however. that he belongs to science as well as to literature, for he was one of the founders of that learned body the Royal Society. a membership in which is still the most coveted prize of the scientific Briton. Pepys's comments on the science of his day are no less remarkable or interesting than his more widely quoted flirtations with his wife's maid. his drinking-bouts. and his comments on the various sermons he heard or slept through regularly on the Sabbath.

—*Major*

Ophthalmologic Surgery

Mass Ophthalmic Surgery under Handicaps in Pakistan

ROLAND I. PRITIKIN, M.D., F.A.C.S., F.I.C.S.
ROCKFORD, ILLINOIS

The surgical treatment of diseases of the eye, including cataract, glaucoma, trichiasis, dacrocystitis and entropion complicating trachoma, at the Henry Holland Mission Eye Hospital at Shikarpur, West Pakistan, is described. Despite the fact that the surgeons work under many handicaps and most of the elaborate modern equipment available in large centers cannot be obtained, it has been observed that the number of operations with poor results is no greater than that recorded for similar procedures under so-called ideal conditions. The author describes the hospital itself, its organization and its working routine, as well as the technics employed for the various operations.

THE scientific history of radioactive substances is of comparatively recent origin. With the advent of the incredibly devastating power of nuclear weapons and the grim prospect of being blasted to eternity, the world has cast a collectively quizzical and apprehensive eye on scientific development. Swift catastrophic attacks similar to the insidious and barbarously treacherous Pearl Harbor assault have stirred all nations to step up preparations designed to resist havoc-laden airborne onslaught, and through new approaches to create efficacious technics of defense. All are therefore very much concerned with everything pertaining to the handling of mass ocular casualties in the Henry Holland Mission Eye Hospital at Shikarpur in West Pakistan. This hospital has been progressively developed since 1909 and cares for hundreds of patients in January and February of each year.

The present hospital may be described as follows: The hospital occupies four acres; the staff residence and camp is on a four acre tract.

The staff residence consists of a bungalow, a servants' building and tents for the staff as needed until the [illegible] is completed. There are seven ward buildings, each 130 feet long by 20 feet wide, with a veranda 9 feet [illegible] in front of each bungalow. There are [illegible] lights in the ward buildings, [illegible]. The [illegible]

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For centuries the blood was thought to be a homogeneous red fluid filled with mysterious vital spirits. capable of much good and of equally great harm. So it was logical, perhaps. that some of the early natural philosophers injected this vital fluid into different animals just to see what would happen.

Samuel Pepys, the immortal author of Pepys's Diary. was one of those inquisitive souls interested in these experiments. Pepys owes his fame to his inimitable accounts of the people and events of his time. It should be stressed. however, that he belongs to science as well as to literature, for he was one of the founders of that learned body the Royal Society. a membership in which is still the most coveted prize of the scientific Briton. Pepys's comments on the science of his day are no less remarkable or interesting than his more widely quoted flirtations with his wife's maid, his drinking-bouts, and his comments on the various sermons he heard or slept through regularly on the Sabbath.

—*Major*

RIASSUNTO

Viene descritta dettagliatamente la cura della cataratta e di altre malattie oculari nella Clinica Oculistica dell 'Ospedale delle Missioni H. Holland a Shikarpur (Pakistan orientale). L'autore tratta delle malattie e delle lesioni osservate, degli anestetici impiegati, delle techiche chirurgiche per la cataratta, la trichiasi, il glaucoma, la dacriocistite, tutti interventi che egli esegue con scarsi mezzi, scarsa assistenza e l'uso di un'unica lampadina elettrica sostenuta da un assistente. Egli sterilizza i ferri con l'ebollizione. I suoi risultati, tuttavia, sono altrettanto buoni di quelli ottenuti operando in condizioni ideali.

RÉSUMÉ

L'auteur décrit le traitement chirurgical de la cataracte et celui d'autres affections oculaires traitées au Henry Holland Mission Eye Hospital à Shikarpur, Pakistan occidental, avec des moyens et un équipement restreints. Il énumère les affections et lésions soignées, les anesthésiques utilisés ainsi que leurs méthodes d'application, les techniques opératoires de la cataracte, du trichiasis, du glaucome et de la dacryocystite, toutes interventions pratiquées à la lumière d'une ampoule électrique maintenue par un assistant au-dessus du champ opératoire. Les instruments sont stérilisés par ébullition. Malgré que plusieurs centaines de malades doivent être refusés chaque année, ayant dépassé le stade de l'opérabilité, il est intéressant de noter que parmi les malades ayant pu bénéficier d'un traitement, les résultats se sont révélés aussi satisfaisants que ceux obtenus dans des conditions techniques modernes idéales.

medades oculares en el Henry Holland Mission Eye Hospital de Shikarpur en Pakistán Occidental a pesar de la limitación de material, facilidades y equipos. El autor describe las enfermedades y lesiones encontradas, los anestésicos empleados, los métodos de inducción anestésica y la técnica de operación para la catarata, la triquiasis, el glaucoma y la dacriocisstitis, todas las cuales han de ser llevadas a cabo a la luz de una bombilla eléctrica sostenida a mano por un ayudante. Todos los instrumentos son esterilizados por ebullición. A pesar de que cada año varios cientos de enfermos no pueden llegar a beneficiarse de la cirugía por tenor cataratas con glaucoma absoluto, es significante el hecho de que en aquellos que han sido operados se han obtenido tan buenos resultados como los que se obtienen donde son posibles las condiciones ideales modernas.

ZUSAMMENFASSUNG

Es liegt eine detaileierte Beschreibung der chirurgischen Behandlung des Katarakts und anderer Augenerkrankungen vor, wie sie im Henry-Holland-Missions-Augenkrankenhaus in Shikarpur, West-Pakistan unter grosser Beschränkung von Hilfsmitteln, Krankenhausmaterial und Apparaturen ausgefuhrt wurde. Der Verfasser berichtet über die Krankheiten und Verletzungen, die zur Behandlung kamen, uber die verwendeten Anasthetika, die Methoden der Einleitung der Anasthesie und uber die Operationstechnik beim Katarakt bei Trichiasis, beim Glaukom und bei der Tränensackentzündung. Alle diese Eingriffe wurden beim Licht einer elektrischen Lampe, die ein [illegible] über das Operationsfeld hielt, [illegible]

through it. The sac itself is not stitched. The edges of the skin are accurately sewn together with interrupted cotton sutures. A firm pad and bandage are applied. The dressing is changed every two days. The sutures are removed on the sixth day after the operation.

In these various operations, an assistant holds an electric light over the eye to be operated upon. All instruments are boiled, cutting as well as non-cutting. In the matter of preoperative preparation, it has been the experience of this clinic that conjunctivitis, dacryocystitis and pyorrhea are contraindications to cataract extraction. Trachoma unaccompanied by purulent conjunctivitis is not dangerous. All eyes are thoroughly irrigated with 1:2,000 mercury bichloride solution immediately prior to the operation, and the contents of the meibomian glands are thoroughly squeezed out. The operative results have been just as good with trachoma patients. A glaucomatous eye with early cataract is handled as follows: An iridencleisis is performed at 6 o'clock, so that the regular iridectomy may be performed at 12 o'clock when the cataract extraction is finally performed. When the cataract knife is inserted into the glaucomatous eye it is passed across the anterior chamber, and a bleb of aqueous fluid is permitted to form on the opposite side, under the conjunctiva, before the incision is completed through the conjunctiva on the opposite side. This enables the tension to be relieved gradually, thus preventing dislocation of the lens. The extracapsular extraction is performed on one-eyed patients, patients of the plethoric type—that is, patients with large, bulging eyes—and patients with glaucomatous cataract. On all other patients the intracapsular extraction is performed. If the lens becomes dislocated after incision, the operation is frequently completed by a regular Smith type of lens knife expression. This is done as follows: The spring speculum is inserted. The cataract knife is inserted into the anterior chamber and held at right angles to the cornea until it has pierced all layers. The handle of the knife is then lowered until it occupies a horizontal position. It is next carried across the anterior chamber, the section being completed at the corneoscleral juncture. No conjunctival flap is made, and no sutures of any kind are used. The iris is then grasped with the iris forceps and quickly cut with Dewecker iris scissors. The spring speculum is next removed; the upper lid is lifted forward on a blunt hook retractor, and the lower lid is held back by the fingers of an assistant. Loosening of the zonular fibers and expression of the lens are accomplished by use of the blunt tip of a curved hook and a wide, flat spatula. Should vitreous present, the operation is immediately terminated by placing the spatula under the lens and extracting it. Should a dislocated lens fall into the vitreous, it is removed immediately with a vectis, or hollow spoon. Patients who have undergone extrascapular extractions are dressed for the first time on the third day, those who have undergone intrascapular extraction, on the fifth day. In uncomplicated cases the patients are discharged on the tenth day.

One must not fail to mention that each year several hundred patients are turned away because they are beyond help. The diagnosis in these instances is cataract with absolute glaucoma.

A significant fact for the ophthalmic surgeon is that, in spite of the tremendous number of patients handled under handicapped conditions, the number of operations that turn out badly is no greater than among patients cared for under the most "ideal" conditions. This demonstrates that, if technic is carefully adjusted to field conditions, excellent results may be obtained.

Orthopedic Surgery

Treatment of Colles' Fracture

A. P. GUTTMAN, M.D., F.R.C.S. (Edin.), F.I.C.S.

WINNIPEG, MANITOBA, CANADA

The author describes the history, incidence, diagnosis, roentgen aspects and treatment of Colles' fracture, which, in his opinion, is one of the most frequently mishandled of all fractures despite its common occurrence. It should be reduced as early as possible and the reduction thoroughly tested for soundness and permanence. He recommends intravenous pentothal as an anesthetic agent, although in some cases he employs 1 to 2 per cent procaine hydrochloride or brachial block anesthesia. His technic of handling this fracture, as well as the care of the patient in the postoperative state, is described in detail. Complications, such as circulatory impairment, redisplacement of the fracture, rupture of the extensor pollicis longus tendon, Sudeck's atrophy, the carpal tunnel syndrome and arthritis are also discussed. In the treatment of Colles' fracture, physiotherapy is less important than the use of active finger exercises by the patient himself.

ABRAHAM Colles first described the fracture associated with his name in the "Edinburgh Medical and Surgical Journal" (cited by Watson-Jones[1]) in 1814. The fracture occurs in the distal end of the radius, within 1 inch (2.5 cm.) of the wrist joint, and extends through the whole thickness of the shaft, with backward displacement of the distal fragment. In addition, there are displacement and tilting of the distal fragment to the radial side, with rotation in supination, and the fragments are impacted. There may be secondary fracture lines extending into the wrist joint. Often there is an associated fracture of the ulnar styloid process.

Incidence.—The Colles fracture is considered second in order of frequency to fracture of the clavicle. It may occur at any age but is especially common in persons past middle age, whose bones are weakened by rarefactive changes.

It is usually due to a fall on the outstretched and pronated palm, which drives the hand backward and to the radial side. Less frequently it occurs as a backfire injury.

Milch described many different variations of Colles' fracture, depending upon the direction of the line of fracture, the [illegible] rotated along its longitudinal axis, or (4) translated parallel to its longitudinal axis.

The backward and upward displacement of the distal radial fragment results in a disruption of the inferior radioulnar joint. If the displacement is marked the ulnar styloid is frequently fractured, owing to strain exerted through the ulnar collateral ligament.

Diagnosis.—In the typical case with displacement, the deformity produced by the upward and backward displacement of the distal radial fragment can be seen and palpated, with a depression at its upper edge; the lower end of the proximal fragment forms a prominence on the volar aspect of the wrist, filling the anterior hollow. The relative levels of the radial and ulnar styloid processes are always altered, the radial styloid being at the same level as the ulnar styloid, or higher whereas normally it is ¼ to ½ inch (0.6 to 1.2 cm.) lower than the ulnar styloid. The line of fracture is extremely tender, and there is tenderness over the ulnar styloid or attachment of the ulnar collateral ligament to it. In fractures without displacement, all these signs may be absent except swelling and tenderness localized to the fracture site.

Roentgen Examination.—The importance of roentgen examination of all suspected fractures of the wrist must be emphasized; complicating injuries, such as scaphoid fractures and dislocations, can be recognized and appropriately treated. Roentgenograms should be taken in both anteroposterior and lateral views. In the normal wrist the radial styloid lies ¼ to ½ inch (0.6 to 1.2 cm.) below the ulnar styloid and the radial and ulnar articular ends form a smooth concavity. In the lateral view the articular surface of the radius faces anteriorly about 5 to 10 degrees as well as distally.

Anesthesia.—I have found intravenous pentothal very satisfactory and use it almost routinely. Occasionlly I employ either local anesthesia, with 1 to 2 per cent procaine hydrochloride into the fracture hematoma, or brachial block anesthesia.

Treatment.—In addition to being one of the commonest fractures. Colles' is also one of the most frequently mishandled. It is very often treated as a minor fracture, without adherence to the principles of fracture treatment, and after two or more attempts at reduction the residual deformity is accepted by the surgeon and the fracture immobilized, with resultant disability.

Reduction of the fracture should be done as soon as possible. Many methods of reduction have been employed; one commonly employed is the maintenance of strong traction for a few moments, after which the hand and the distal fragment are forced into hyperextension to break up the impaction. This is followed by manipulation. Often this does not disimpact the fragments; it may result in increased trauma with swelling, and a good reduction is not obtained. After a recheck by the fluoroscopic or roentgen examination, further manipulation is attempted. One is then often inclined to accept as satisfactory the reduction obtained, which may not be satisfactory from the anatomic and functional points of view.

Carothers and Boyd[3] stated: "We feel that strong traction in the longitudinal axis of the radius is an adequate means of overcoming radial impaction and dorsal displacement though a certain amount of moulding may be necessary to complete the reduction." They employ the "finger trap" introduced by Caldwell (cited by Carothers and Boyd), which is applied to the thumb and a cord with the desired amount of traction. After five to fifteen minutes of traction fluoroscopic examination is made, and, if reduction is not complete, manipulation and moulding usually effect a satisfactory reduction. They prefer the vertical to the horizontal position of the forearm during traction.

In my experience, traction and countertraction for a minimum period of ten minutes is the simplest method of overcoming impaction of the fragments and tension of the muscles of the forearm. When two assistants are available, one applies countertraction to the lower part of the arm above the elbow, flexed at 90 degrees, avoiding direct pressure to the brachial artery, while the surgeon applies traction to the thumb and little finger, the pull of traction and countertraction being steadily applied. No great pulling force is necessary. One repeatedly observes that the bony deformity disappears as a result. (When only one assistant is available, countertraction may be applied by a band around the lower part of the arm over an abdominal pad and fastened to a hook in the wall or other convenient object.) After the ten-minute period of traction and countertraction the second assistant takes over the traction and the surgeon, after studying the roentgenograms, manipulates the fracture. Traction and countertraction are maintained during manipulation, with subsequent application of plaster of paris. I employ the maneuver of Sir Robert Jones to complete reduction. In reducing a right Colles' fracture the surgeon faces the patient, places his right hand with the thenar eminence against the projecting lower end of the shaft of the radius on volar aspect of the wrist, which is in midpronation, and his left hand on the dorsum of the wrist with the thenar eminence against the dorsally displaced lower fragment. Pressure and counterpressure are then applied to the respective fragments, the distal fragment being pressed volar- [illegible] a result of the continued traction and countertraction the fracture is readily disimpacted, and with the manipulation as outlined no great force is required. No added trauma is superimposed, and postreduction swelling is minimal. I prefer to reduce the fracture as soon as possible after the injury. The object of treatment should be complete restoration of the normal anatomic configuration.

Fluoroscopic study is not employed during reduction of a Colles' fracture. By the aforedescribed procedure a good anatomic reduction is obtained without exposure of the surgeon to unnecessary irradiation, with its possible dangers.

Tests of Reduction:—Immediately after reduction, the following clinical tests are applied:

1. The deformity must have disappeared.
2. The radial styloid process must be ¼ to ½ inch (0.6 to 1.2 cm.) distal to the ulnar styloid.
3. The wrist can be flexed to almost a right angle without effort.
4. Palpation must reveal the smooth concavity of the anterior surface of the lower end of the radius.

After satisfactory reduction is obtained, the hand is deviated ulnarward in the "pistol-shot position," in the neutral position or in slight flexion in midpronation, and an unpadded plaster of paris three-quarters cast is applied as follows: a plaster splint consisting of six layers of 6-inch (15 cm.) plaster (Gypsona) is applied to extend from about 1 inch (2.5 cm.) below the elbow to the metacarpophalangeal joints on the dorsum of the hand and the distal palmar crease in the palm. This is cut out [illegible], to encircle the thumb, and extended [illegible]

toires, déplacement secondaire des fragments osseux, déchirure du long extenseur du pouce, atrophie de Sudeck, syndrome du canal carpien, arthrite). Les exercices digitaux que le blessé doit apprendre à effectuer ont plus d'importance dans le traitement de la fracture de Colles que la physiothérapie.

RIASSUNTO

L'autore descrive gli aspetti stotici, diagnostici e radioligici della frattura di Colles, che—secondo lui—è una delle fratture che più spesso vengono curate male nonostante la sua frequenza. Essa deve essere ridotta il più presto possibile e la riduzione deve essere mantenuta con cura e saldamente. Si deve usare, come anestetico, il entotal endovena, e in qualche caso il blocco novocainico brachiale. Descrive dettagliatamente la sua tecnica di trattamento della frattura e i provevedimenti post-operatori necessari; elenca anche le complicanz e quali i disturbi circolatori, lo spostamento secondario dei frammenti, la rottura del tendine dell 'estensore lungo del pollice, l'atrofia di Sudeck, la sindrome del tunnel del carpo e l'atrofia secondaria.

Nelle cura della frattura di Colles la fisioterapia e meno importante delli esercizi attivi di mobilizzazione delle dita.

RESUMEN

El autor describe la historia, frecuencia, diagnóstico, aspecto radiológico y tratamiento de la fractura de colles, que en su opinión es la más frecuentemente tratada equivocadamente a pesar de su incidencia. Deben ser reducidas lo antes posible y la reducción debe ser bien controlada. Recomienda como anestésico el Pentotal intravenoso aunque en algunos casos emplea como anestésico el plexo braquial o el hodrocloruro de procaína.

Describe en detalle su técnica para la reducción de las fracturas asíc omo los cuidados de los enfermos durante el postoperatorio. Tambiés se ocupa en el trabajo de les complicaciones tales como los trastornos circulatorios, el redesplazamiento de las fracturas, la rotura del extensor largo del pulgar, la atrofia de Sudeck. el síndrome del tunel carpiano y la artritis.

En el tratamiento de la fractura de colles tiene mucha más importancia el uso activo de los músculos de la articulación afectados que la fisioterapia.

ZUSAMMENFASSUNG

Der Verfasser beschreibt die Geschichte, die Häufigkeit, die Diagnose, die Röntgenbefunde und die Behandlung der typischen Radiusfraktur, die er trotz ihres häufigen Vorkommens für die am häufigsten misshandelte aller Frakturen hält. Der Bruch sollte so früh wie möglich eingerichtet und die Stellung der Fragmente sorgfältig auf Korrektheit und Dauerhaftigkeit geprüft werden. Zur Anästhesie empfiehlt er die intravenöse Verabfolgung von Pentothal, obwohl er gelegentlich auch ein- bis zweiprozentige Novocaineinspritzungen oder eine Umspritzungsanästhesie des Brachialnerven verwendet. Seine Behandlungstechnik un die Versorgung des Kranken nach dem Eingriff werden in ihren Einzelheiten beschrieben. Ferner werden Komplikationen wie Kreislaufstörungen, Verschiebung der Fragmente, Riss der Sehne des langen Daumenstreckers, Sudecksche Atrophie, das karpale Tunnelsyndrom und Arthritis erörtert. Physiotherapeutische Massnahmen sind zur Behandlung der typischen Radiusfraktur nicht so wichtig wie die Durchführung aktiver Fingerübungen seitens des Patienten.

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Section en Francais

Le Problème de la Reparation des Tendons Flechisseurs

(Problem of Repair of the Flexor Tendons)

MARC ISELIN, M.D., F.I.C.S., ET J. BASSOT, M.D.

PARIS, FRANCE

Repair of the flexor tendons is a somewhat controversial subject, largely because of the question whether it is best accomplished by grafting or by suturing. In the author's opinion this question is largely academic. Repair by either method depends for its success upon two points: the solidity of the tendons, and their mobility. The solidity of the tendons, or the lack thereof, represents a technical problem, dependent on the quality and the nature of the grafts or sutures; their mobility, on the other hand, poses a biologic problem. Suturing can be successful only with a fresh lesion; otherwise the grafting technic is indicated. Whatever the technic employed, and however skilled the surgeon, it is still impossible to predict the result of the operation

MALGRÉ le nombre de publications optimistes, malgré les soi disant perfectionnements des techniques, malgré les détails souvent contradictoires auxquels les chirurgiens qui travaillent particulièrement la question, attribuent leurs bons résultats, il reste à notre avis indiscutable que, malgré tous les efforts, nous n'avons pas encore trouvé la solution du problème de la réparation des tendons fléchisseurs des doigts.

Si la question était résolue, nous devrions obtenir très rapidement et de manière quasi habituelle, le retour de mouvement de flexion--extension dans les doigts opérés—nous devrions savior le pourquoi des échecs et le pourquoi des succès. Or nous sommes actuellement très loin de là; pour les chirurgiens les plus expérimentés, la même opération faite dans des conditions identique peut aussi bien amener un succès qu'un échec, sans que ni l'un ni l'autre puisse être ni prévu ni expliqué. De plus, le succès n'est obtenu que par une longue et fastidieuse mobilisation volontaire qui demande, pour être menée à bien,

toires, déplacement secondaire des fragments osseux, déchirure du long extenseur du pouce, atrophie de Sudeck, syndrome du canal carpien, arthrite). Les exercices digitaux que le blessé doit apprendre à effectuer ont plus d'importance dans le traitement de la fracture de Colles que la physiothérapie.

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toires, déplacement secondaire des fragments osseux, déchirure du long extenseur du pouce, atrophie de Sudeck, syndrome du canal carpien, arthrite). Les exercices digitaux que le blessé doit apprendre à effectuer ont plus d'importance dans le traitement de la fracture de Colles que la physiothérapie.

RIASSUNTO

L'autore descrive gli aspetti stotici, diagnostici e radioligici della frattura di Colles, che—secondo lui—è una delle fratture che più spesso vengono curate male nonostante la sua frequenza. Essa deve essere ridotta il più presto possibile e la riduzione deve essere mantenuta con cura e saldamente. Si deve usare, come anestetico, il entotal endovena, e in qualche caso il blocco novocainico brachiale. Descrive dettagliatamente la sua tecnica di trattamento della frattura e i provevedimenti post-operatori necessari; elenca anche le complicanz e quali i disturbi circolatori, lo spostamento secondario dei frammenti, la rottura del tendine dell 'estensore lungo del pollice, l'atrofia di Sudeck, la sindrome del tunnel del carpo e l'atrofia secondaria.

Nelle cura della frattura di Colles la fisioterapia e meno importante delli esercizi attivi di mobilizzazione delle dita.

RESUMEN

El autor describe la historia, frecuencia, diagnóstico, aspecto radiológico y tratamiento de la fractura de colles, que en su opinión es la más frecuentemente tratada equivocadamente a pesar de su incidencia. Deben ser reducidas lo antes posible y la reducción debe ser bien controlada. Recomienda como anestésico el Pentotal intravenoso aunque en algunos casos emplea como anestésico el plexo braquial o el hodrocloruro de procaína.

Describe en detalle su técnica para la reducción de las fracturas asíc omo los cuidados de los enfermos durante el postoperatorio. Tambiés se ocupa en el trabajo de les complicaciones tales como los trastornos circulatorios, el redesplazamiento de las fracturas, la rotura del extensor largo del pulgar, la atrofia de Sudeck, el síndrome del tunel carpiano y la artritis.

En el tratamiento de la fractura de colles tiene mucha más importancia el uso activo de los músculos de la articulación afectados que la fisioterapia.

ZUSAMMENFASSUNG

Der Verfasser beschreibt die Geschichte, die Häufigkeit, die Diagnose, die Röntgenbefunde und die Behandlung der typischen Radiusfraktur, die er trotz ihres häufigen Vorkommens für die am häufigsten misshandelte aller Frakturen hält. Der Bruch sollte so früh wie möglich eingerichtet und die Stellung der Fragmente sorgfältig auf Korrektheit und Dauerhaftigkeit geprüft werden. Zur Anästhesie empfiehlt er die intravenöse Verabfolgung von Pentothal, obwohl er gelegentlich auch ein- bis zweiprozentige Novocaineinspritzungen oder eine Umspritzungsanästhesie des Brachialnerven verwendet. Seine Behandlungstechnik un die Versorgung des Kranken nach dem Eingriff werden in ihren Einzelheiten beschrieben. Ferner werden Komplikationen wie Kreislaufstörungen, Verschiebung der Fragmente, Riss der Sehne des langen Daumenstreckers, Sudecksche Atrophie, das karpale Tunnelsyndrom und Arthritis erörtert. Physiotherapeutische Massnahmen sind zur Behandlung der typischen Radiusfraktur nicht so wichtig wie die Durchführung aktiver Fingerübungen seitens des Patienten.

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Section en Francais

Le Problème de la Reparation des Tendons Flechisseurs

(Problem of Repair of the Flexor Tendons)

MARC ISELIN, M.D., F.I.C.S., ET J. BASSOT, M.D.

PARIS, FRANCE

Repair of the flexor tendons is a somewhat controversial subject, largely because of the question whether it is best accomplished by grafting or by suturing. In the author's opinion this question is largely academic. Repair by either method depends for its success upon two points: the solidity of the tendons, and their mobility. The solidity of the tendons, or the lack thereof, represents a technical problem, dependent on the quality and the nature of the grafts or sutures; their mobility, on the other hand, poses a biologic problem. Suturing can be successful only with a fresh lesion; otherwise the grafting technic is indicated. Whatever the technic employed, and however skilled the surgeon, it is still impossible to predict the result of the operation.

MALGRÉ le nombre de publications optimistes, malgré les soi disant perfectionnements des techniques, malgré les détails souvent contradictoires auxquels les chirurgiens qui travaillent particulièrement la question, attribuent leurs bons résultats, il reste à notre avis indiscutable que, malgré tous les efforts, nous n'avons pas encore trouvé la solution du problème de la réparation des tendons fléchisseurs des doigts.

Si la question était résolue, nous devrions obtenir très rapidement et de manière quasi habituelle, le retour de mouvement de flexion--extension dans les doigts opérés—nous devrions savior le pourquoi des échecs et le pourquoi des succès. Or nous sommes actuellement très loin de là; pour les chirurgiens les plus expérimentés, la même opération faite dans des conditions identiques peut aussi bien amener un succès qu'un échec, sans que ni l'un ni l'autre puisse être ni prévu ni expliqué. De plus, le succès n'est obtenu que par une longue et fastidieuse mobilisation volontaire qui demande, pour être menée à bien, une volonté, une attention et une patience

—le problème est mal posé, car on le considère comme d'ordre mécanique et l'on cherche sa solution dans des détails de technique alors qu'il est d'ordre essentiellement biologique.

A. *Quelques idées trop théoriques, généralement admises.*

1) *La greffe est meilleure que la suture*

Tous les chirurgiens de ma génération ont vécu (et beaucoup vivent encore) sur ce postulat que l'échec de la suture tendineuse vient de ce que seule adhère la ligne de suture. Ils croient que si cette adhérence se fait au milieu d'éléments souples comme à la paume de la main et au poignet, elle est sans importance et les résultats sont bons. Si par contre elle se fait au niveau du canal digital, lâ où le tendon coulisse très exactement dans un canal ostéo-fibreux, l'adhérence équivaut à un blocage et signe l'échec. De là l'idée sur laquelle étaient basées toutes les techniques dites modernes, de ne pas faire de suture à ce niveau et d'utiliser une greffe qui a l'avantage théorique de reporter les sutures aux deux extrémités, là où l'adhérence est sans importance.

Malheureusement, si au point de vue mécanique, cette conception est admissible, au point de vue biologique, elle est absolument illusoire, car une greffe pour vivre est réhabitée par la périphérie, de même que les sutures pour être solides, doivent être réparées par un processus périphérique.

Par nos travaux histologiques avec LaFaury[8] nous avons montré:

—que le tendon sectionné dégénérait sur une longueur parfois très grande et qu'il se transformait en tissu conjonctif cicatriciel banal, pas toujours en son centre, mais toujours à sa périphérie.

—que la réparation se faisait par la périphérie, c'est à dire par la gaine synoviale qui présente alors un caractére tout à fait original. A l'état normal, elle est un organe de glissement. Après section, elle devient un organe de réparation.

La réparation est essentiellement périphérique que ce soit pour le tendon simplement suturé ou bien que ce soit pour une greffe interposée entre la phalangette et l'origine du lombrical. La réparation axiale n'est qu'une vue de l'esprit, comme le prouvent:

a) certaines de nos réinterventions qui dès le 15ème jour ont montré que la greffe était entièrement enveloppée par une couche conjonctive qui la bloquait complètement.

b) par les essais que nous avons fait d'éngainement des sutures dans du Polyéthylène, sutures qui ont toutes désuni, car, à la réintervention on constatait qu'il n'y avait eu aucun processus de réparation axial.

c) par les études expérimentales de Teneff et Fonda,[16] de Skoog et Persson[15] sur la revascularisation des greffes dans le tendon d'Achille du chien, qui se fait d'abord perpendiculairement à partir de la périphérie pour, après le 15ème jour, s'orienter progressivement longitudinalement arrivant en deux mois environ, à retrouver la structure longitudinale du tendon normal.

2) *Les adhérences résultent de défauts de technique*

C'est une erreur absolue; et de nos travaux, il résulte que les adhérences changent complètement de signification. Elles ne constituent has un accident fortuit, évitable, que l'on peut et doit éviter par des perfectionnements technique ou par une manière particulière d'opérer (technique dite atraumatique). Elles représentent un élément indispensable à la réparation tendineuse: ou bien le tendon est réparé, la greffe est revascularisée mais au prix des adhérences. Ou bien, il n'y a pas d'adhérence et la réparation ne se fait pas.

Ces simples faits changent complètement la position du problème de la réparation des tendons fléchisseurs chez l'homme: *la difficulté n'est pas d'éviter les adhérences: la difficulté est d'assurer la libération de celles ci.* Et c'est là, où les résultats expérimentaux ne peuvent être comparés aux résultats clinique car, si chez l'animal, la libération des adhérences se fait habituellement et progressivement un mois après la réparation, chez l'homme il n'en va de même que très irrégulièrement. Lorsque les adhérences se libèrent, on obtient un succès: si elles persistent, l' échec est manifeste.

Malheureusement cette libération est imprévisible et nous ne savons pas comment en gouverner l'évolution. Nous sommes dans la situation d'architectes qui ayant construit une maison grâce à des échafaudages, ne savent pas comment faire disparaître ceux ci, sauf en les laissant crouler.

La libération des adhérences est imprévisible, car leur étendue, leur importance et leur solidité varient d' un cas à l' autre. Les réinterventions le montrent bien: dans les mêmes conditions de technique, certaines adhérences sont discrètes, d'autres constituent une masse envahissante qui englobe tous les tissus péri tendineux, depuis l'os jusqu' à la peau. Seules des variations personnelles d'un blessé à l'autre peuvent expliquer ces différences.

Les adhérences sont en somme du tissu conjonctif cicatriciel: mais si le conjonctif est le même chez tous les hommes et les animaux, ses réactions sont tout à fait différentes car elles sont sous la dépendance de régulations neuro-hormonales, réactions qui sont absolument individuelles et variées d'un sujet à l'autre, d'un soit à la fois solide et mobile. La solidité est le problème primordial car sans elle la mobilité n'est pas possible. Mais la réciproque n'est pas vraie car un tendon solide n'est pas forcément mobile, malheureusement.

De ces deux problèmes, celui de la mobilité n'est pas d'ordre technique: il est d'ordre biologique et sa solution nous échappe. Par contre celui de la solidité est au contraire d'ordre purement technique et la valeur de l'acte chirurgical influe beaucoup sur lui. Or il y a deux causes d'échecs qu'il faut savoir reconnaitre: les échecs par désunion et les échecs par blocage. La désunion est plus fréquente qu'on ne le croit: elle se manifeste lorsque le doigt réparé est en extension. Le blocage se reconnaît à ce que le doigt est resté dans l'attitude de flexion qu'il avait à la fin de l'opération et qui a été maintenue par l'appareillage: mais la flexion volontaire dans les phalanges est négligeable. Par conséquent la qualité de la technique conserve son importance, mais elle se manifeste surtout dans la solidité de la réparation.

2) *Mérites comparés de la suture et de la greffe.*

La discussion sur la réparation par suture ou par greffe est à nos yeux purement académique. Il n'y a aucune raison biologique de préférer la greffe à la suture: par conséquent il n'y a aucune raison à priori, de ne pas suturer les plaies qui siègent au canal digital. Par contre il y a des raisons anatomiques impératives contre la suture, lorsque par suite de dégénérescence et de rétraction, celle ci n'est plus possible sans traction anormale.

Dans les opérations secondaires et à plus forte raison dans les opérations tardives, la dégénérescence des extrémités tendineuses, la rétraction musculaire ne permettent plus une approximation normale, sans traction, des extrémités sectionnées. La greffe est alors obligatoire mais elle ne peut être constituée par un simple pontage qui aboutirait nécessairement à l'échec: elle doit s'étendre depuis l'insertion du lombrical à la main jusqu'à la phalangette, au doigt, condition admise par tous, pour l'obtention d'un pourcentage honorable de résultats.

3) *Date de la mobilisation*

Les constatations biologiques que nous avons exposées montrent bien l'inutilité de la mobilisation précoce puisqu'elle est obligatoirement freinée par le développement des adhérences porte-vaisseaux nécessaires à la consolidation de la suture et à la revascularisation de la greffe. Elles montrent également le peu de danger d'une mobilisation avant la 3eme semaine, date établie expérimentalement par Mason et ses collaborateurs,[10, 11] car elle fixe la consolidation du cal tendineux. En effet, du fait des adhérences obligatoires, la force ne s'exerce que très peu sur les sutures. Pour nous nous commençons la mobilisation quand les sutures sont complètement et solidement cicatrisées, c'est à dire du 12eme au 15eme jour.

4) *Possibilité d'un traitement hormonal per et post opératoire*[2]

Le tendon n'est que du tissu conjonctif différencié.[1, 2, 4] Sa réparation obéit nécessairement aux commandes neuro-hormonales, qui dirigent la cicatrisation conjonctive.

Vue sous l'angle neuro-hormonal, on se rend compte de la complexité du système mis en jeu par la réparation tendineuse. Les hormones anaboliques doivent se présenter les premières et commander à la reconstruction du tendon: ensuite des hormones cataboliques doivent présider à la destruction de la cicatrice. Mais l'ordre d'action de ces hormones est anormal, car toujours dans l'économie, la réparation d'une plaie commence par une phase catabolique puis seulement en second, apparaît la phase anabolique.

Pour diriger la formation et la disparition des adhérences, il faudrait être parfaitement au courant de l'action et du dosage des produits que nous avons à notre disposition: d'une part le groupe STH-minéralo corticoïdes pour l'anabolisme; d'autre part le groupe ACTH, cortisone-glyco-corticoïdes, pour le catabolisme. Malheureusement, les choses ne sont pas si simples et les essais de traitement biologiques que nous poursuivons depuis près de deux ans sont encore loin d'être concluants.

Nous nous sommes rendus compte que l'utilisation des hormones anaboliques était sans intérêt, car les échecs sont beaucoup plus dûs aux adhérences qu'aux désunions (ces dernières étant attribuables à des erreurs de technique). Nous nous sommes donc cantonnés dans l'utilisation des hormones cataboliques, administrées par voie générale et par voie locale. La question est en pleine étude, elle sera discutée au prochain Congrès Français de Chirurgie Plastique (Septembre 1958) il serait prématuré d'en parler ici, car nous n'avons encore aucune directive précise et éprouvée à présenter.

COMMENTAIRES

Ces idées nous ont amené à adopter la ligne de conduite suivante: utiliser la suture quand elle est possible, utiliser la greffe dans tous les cas où la suture sans traction est impossible.

Plaies récentes

Dans les plaies fraîches, nous suturons donc les tendons sectionnés, mais à deux conditions:

1. ne pas les opérer immédiatement,

mais les opérer en urgence différée (delayed émergency)

2. lorsqu'il s'agit de plaies siégeant au canal digital, les traiter par les techniques particulières exposant et cousant au minimum les extrémités tendineuses rapprochées.

La notion *d'urgence différée* est capitale à nos yeux; c'est une notion générale[6, 7] qui commande toute la conception moderne de l'urgence, c'est à dire de ne pas intervenir avant que le malade ne soit bien préparé. Elle trouve à la main une application magnifique grâce à laquelle nos résultat actuels sont nettement améliorés. Dès que le blessé arrive, la main est nettoyée, immobilisée et pansée avec une solution d'ammonium quarternaire (cétavlon, biocidan) : on lui administre de la pénicilline et l'on établit et corrige si besoin, son bilan humoral. Il ne sera opéré que un, deux, même trois jours après, le pansement renouvelé tous les jours montrant que la main est absolument propre; l'opération est éxécutée dans les meilleures conditions physiques et matérielles, par le chirurgien le plus compétent disposant de tout le temps et de tout le matériel nécessaire. Le gros argument contre les sutures primitives tombe ainsi puisque le danger d'infection post opératoire, même atténuée, disparait grace à ces précautions.

Les procédés de suture sont délicats; il n'est pas de notre intention de les décrire ici en detail. Ce sont:

1 [illegible] (Montant,[3] Verdan[4]) qui consiste à maintenir les deux [illegible] un seul point de fil très fin qui ne sert qu'à maintenir l'approximation.

Ces deux procédés ont en commun le souci de léser au minimum les extrémités tendineuses. On trouvera leur description complète dans notre nouvel atlas de technique.

Plaies anciennes

Dans les plaies anciennes, la dégénerescence des extrémités tendineuses, la rétraction musculaire interdisant la suture; nous utilisons alors les greffes minces, selon la technique de Pulvertaft, en réinserant d'qbord l'extrémité distale sur la phalangette par le procédé en pull out transphalangien trans unguéal de Sterling Bunnell et en suturant l'extrémité centrale au fléchisseur profond, dans la région du lombrical, par transfixion comme le fait Pulvertaft.

Suites opératoires

La mobilisation est commençée vers le 12ème-15ème jour au plus tard, mais pas avant que les sutures cutanées ne soient parfaitement cicatrisées. C'est de celle-ci que dépend le succès ou l'échec: en cas de succès, la flexion volontaire des phalanges ne cesse de progresser.

En cas d'échec, il faut en distinguer la cause pour pouvoir la traiter.

s'il s'agit d'échec par désunion, le doigt qui avait été mis en flexion légère au cours de l'opération se trouve en extension. Inutile alors de poursuivre indéfiniment une réeducation longue et illusoire, il faut prendre une décision. Si la réparation avait été faite par suture, on peut réintervenir par greffe-mais si la réparation extension continue par lames d'acier très souples selon un appareillage décrit par LeVame[9] qui permet en même temps la flexion active de la réeducation. Nous récupérons ainsi un certain nombre d'échecs très rapidement.

Si l'extension continue échoue malgré le traitement hormonal que nous lui adjoignons, il reste la ressource d'un déblocage chirurgical par ténolyse.[12] Grâce à cette opération on augmente encore le nombre des succès à condition que le blocage siège devant la première phalange, c'est à dire, au maximum à la base du doigt. *Si le blocage siège à la deuxiéme* phalange la libération du tendon est compliquée par la rétraction cutanée qui est constante et pose pour finir de délicats problèmes de fermeture.

On voit donc les différents avantages de la suture quand elle est possible: ses résultats ne sont pas plus mauvais que ceux de la greffe, mais ils sont acquis avec un gain de temps extrêmement précieux: en cas d'échec par blocage, la ténolyse est relativement facile et donne de beaux succès; en cas d'échec par désunion il est possible de reprendre l'opération en utilisant une greffe.

RÉSUMÉ

1. A l'heure actuelle, il est encore impossible de prévoir les résultats d'une réparation tendineuse des fléchisseurs, quelque soit la technique employée, même par le chirurgien le plus qualifié.

2. Pour bien comprendre la position de ce problème, il faut réaliser qu'une réparation postule deux conditions: la solidité et la mobilité du tendon réparé.

La solidité est un problème technique, dépendant de la qualité et de la nature des sutures ou des greffes.

La mobilité est un problème biologique, celui de la libération des adhérences, qui ont servi à réparer le tendon. En effet le cal fibreux unitif se reconstitue par la périphérie et non par bout à bout.

3. L'adhérence n'est pas un accident évitable par des précautions et artifices techniques: elle représente un processus normal, indispensable à la réparation de la suture ou à la revascularisation de la greffe. Toute la question est d'obtenir la disparition de ces adhérences, une fois qu'elles ont rempli leur rôle constructif. Le seul procédé que nous connaissons pour influer sur cette libération est la mobilisation active, volontaire, personnelle de l'opéré.

4. *Ce procédé est aussi aléatoire qu'empirique*: dans l'état actuel de nos connaissances, la résorption du cal fibreux est *d'ordre neuro-hormonal. On peut admettre* que pour réparer un tendon, il faut que deux variétés d'hormones entrent en jeu successivement. D'abord des hormones anaboliques pour en assurer la solidité, puis des hormones cataboliques pour en assurer la mobilité.

5. Jusqu'à présent, nos travaux pour utiliser les hormones en pratique, n'ont pas amené de résultat probant et des deux problèmes sus-énoncés, celui de la mobilité ne dépend pas du chirurgien pour le moment, mais uniquement de l'opéré.

6. Par contre delui de la solidité, affaire de technique, dépend absolument de l'art de l'opérateur. Le chirurgien doit obtenir un tendon solide, mais le procédé avec lequel il l'obtient importe peu. Les discussions entre les mérites de la suture et de la greffe deviennent académiques; si l'on peut réparer par suture, autant le faire. Si la suture est impossible sans traction il est indispensable de recourir à une greffe.

7. Or la suture n'est possible que sur des lésions fraîches, avant tout remaniement tendineux et toute organisation cicatricielle. Dans les plaies récentes il y a donc tout intérêt à faire des sutures primitives, même au canal digital, plutôt que

de sacrifier le tendon et faire d'emblée une greffe.

Mais suture primitive ne veut pas dire suture immé diate, sitôt après la blessure, car elle se fait alors sur une peau non préparée, sur un malade non préparé et dans des conditions de matériel, de personnel et d'expérience trop souvent insuffisantes. La suture doit être faite en *urgence différée* après le temps nécessaire à une préparation adéquate.

La suture aux doigts sera faite suivant des techniques particulières: sutures bloquées et sutures appuyées.

8. Dans tous les cas opérés secondairement, la dégénérescence tendineuse, la rétraction musculaire empêchent l'approximation harmonieuse des extrémités avivées: on aura donc obligatoirement recours à des greffes mises en place selon les techniques universellement adoptées.

9. Il y a deux variétés d'échecs de la réparation tendineuse: ceux par désunion, ceux par blocage. Dans les échecs par désunion (donc par manque de solidité de la cicatrice tendineuse) le doigt est en extension et les résultats d'opérations itératives sont très aléatoires.

Dans les échecs par blocage, le doigt est en flexion, et tous les espoirs de récupération sont autorisés, soit spontanément, par l'exercice et l'extension continue, soit par des libérations secondaires.

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[illegible] complete test, after all, has local [illegible]

Yodopexia y Nefrogramas

(Iodopexy and Nephrograms)

A. PUIGVERT, M.D., F.I.C.S.
BARCELONA, SPAIN

EL estado actual de nuestros conocimientos acerca la fisiología de la glándula renal, permiten considerar a ésta como un órgano de excresión, toda vez que la mayoría de los elementos que el riñón elimina son productos desechados por el organismo en la fase terminal metabólica, inoperantes para el individuo, e incluso algunos, tóxicos como revela el acúmulo de ciertas substancias en los casos de fallo grave de la función excretora del riñón. No se puede dejar en olvido la función secretora de la glándula al producir ciertas substancias que si bien la mayoría son luego excretadas, algunas se reintegran al torrente circulatorio para sufrir modificación o estimular nuevas secreciones como es el caso de la renina; pero en la problemática que aquí se plantea, sólo interesa el riñón como órgano de excreción de substancias exógenas con fines diagnósticos.

Merced a esta última función, nos es permitido el estudio funcional del riñón mediante la valoración de ciertas substancias exógenas excretadas, provocando artificiosamente esta actividad mediante la inyección de cuerpos extraños en el individuo y observando las peculiaridades de su excreción por el riñón; de la forma o rapidez de la eliminación de tales cuerpos exógenos se valua el estado de la función excretora renal.

Entre las substancias exógenas que se utilizan para la valoración funcional renal, figuran los contrastes yodados que dan a la orina la posibilidad de absorción roentgenológica, presentando el doble interés de la valoración de la función renal desde el punto de vista excretor de la glándula y revelando además, la morfología y la función de las vías urinarias. Actualmente, por esta última propiedad informativa se reduce de rechazo, el estado de la función propia del riñón, y que por el momento justifica ampliamente su empleo cotidiano en la práctica clínica de investigación diagnóstica en los urópatas.

El tránsito renal de las substancias de constraste urográfico no está perfectamente esclarecido, de aquí que no podamos exigir a este ensayo fisio-clínico su total rendimiento, pues el fenómeno íntimo de le excerción yódica por el riñón no es exactamente conocido y solamente valoramos el fenómeno a través de las imágenes de relleno de las vías urinarias. Por la densidad comparativa entre las sombras proyectadas por cada pielograma, enjuiciamos la función renal, si bien escapan a nuestros conocimientos los fenómenos de la excreción yódica, los cuales limitan la perfecta valoración de las imágenes como exponente de la función glandular.

Conferencia en la Catedra de Urologia del Prof. Bernard Fey Hospital Cochin, Paris, marzo de 1958.

Submitted for publication Aug. 13, 1958.

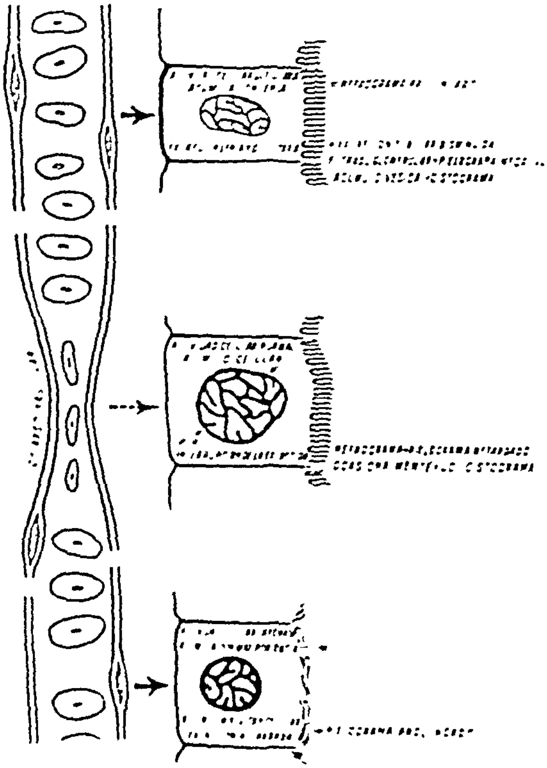

Fig. 1.

En la actualidad el creciente interés en la investigación urográfica de los pacientes, débese orientar a la obtención e interpretación de nefrogramas como medio para el mejor conocimiento de la patología renal, pues, no hay duda que para un futuro inmediato, cuando alcancemos la obtención de nítidos nefrogramas, completados por los correspondientes pielogramas tal como actualmente se obtienen, la información acerca de los procesos patológicos intrarrenales será más amplia, e incluso antes de que éstos provoquen modificaciones en la morfología o en la [illegible]

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aumente el caudal y la calidad de nuestros conocimientos clínicos.

Entretanto permítasenos distinguir tres tipos de nefrograma, resultado de las observaciones clínicas, advirtiendo que por el momento no podemos sentar fundamentos etio-patogénicos claros con respecto a los mismos, y sólo su discriminación como evidencia de actividad funcional renal.

Podemos distinguir el nefrograma por hipofunción renal, el nefrograma por inhibición o por intolerancia, como le ha llamado Couvelaire, y el enfrograma por retención. Cada una de estas tres modalidades del nefrograma expone un sentido patogénico el que se fundamenta la clasificación, y ello permite su enjuiciamiento relativo, no selectivo, con respecto a la función parenquimatosa renal en terreno de hipótesis.

Calificamos de nefrograma por "hipofunción" el que se observa en pacientes cuya capacidad funcional del riñón es limitada o deficitaria sin haber llegado a alcanzar la insuficiencia y corresponde a pacientes con nefropatías evolutivas bilaterales que tienden a la nefroesclerosis. En algunos de estos nefrópatas cuya cifra de urea permite la práctica de la exploración urográfica, con el fin de conocer y destacar posibles alteraciones de las vías, se alcanza, con frecuencia, la visualización bilateral del nefrograma acompañado de cistograma bien evidente, si bien poco destacado. Llama la atención en ellos, la ausencia de pielograma completo y sólo cuanto más, si la imagen que se proyecta es de gran nitidez; con alguna mayor frecuencia puede observarse alguna que otra [illegible] peripapilar o calicilar de [illegible] informativo. Más [illegible]

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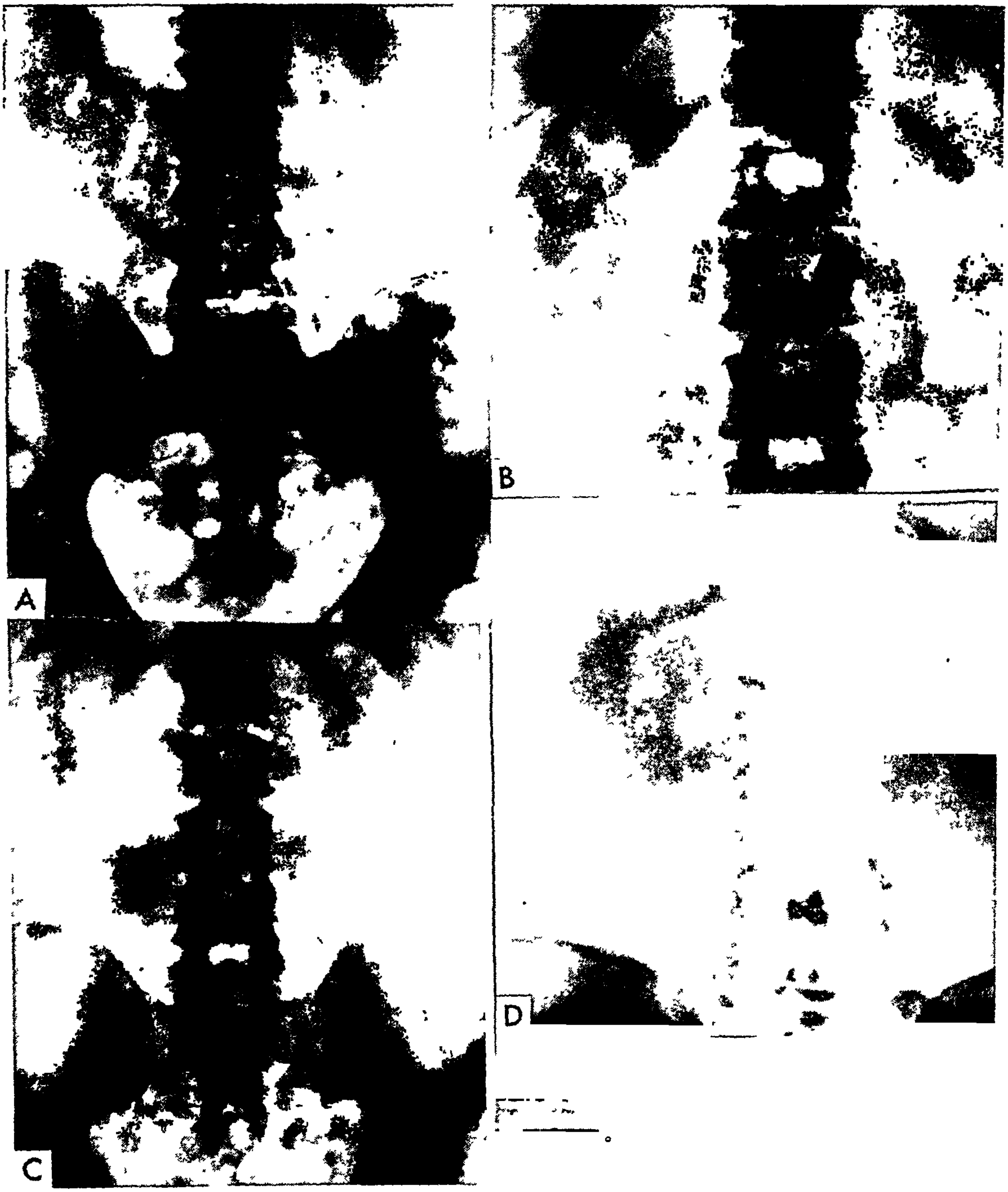

Fig. 2 *(H.C. 13315)*.—*A*, néfrograma izdo. a los 15 minutos de la inyección del contraste: a los 45 minutos el riñón izdo. seguía silencioso y le fué propuesta la nefrectomía. *B* (H.C. 16913), nefrograma bilateral en un paciente con nefro-esclerosis juvenil evolutiva. *C* (H.C. 16913), nefrograma bilateral y cistograma, a los 35 minutos. *D* (H.C. 27487), nefrograma por inhibición a los 10 minutos de la inyección. El período de schock, con T.A. Máx. 5—La imagen de ambos nefrogramas es borrosa por el temblor que sufría el enfermo.

Fig. 3 (H.C. 27487).—Nefrograma por inhibición a los 15 minutos. Más destacado por haber cesado el temblor y la T. A. Máx. ligeramente remontada.

frograma—cistograma), se observa precisamente en pacientes con nefroesclerosis evolutiva que defienden la suficiencia renal de excreción mediante isostenuria con poliuria compensadora, la proporción de substancia yodada disuelta por c.c. de orina es tan baja, que dado el escaso volumen de líquido acumulado en la pelvis, no alcanza la suficiente absorción de Rayos Röentgen, para que imprima suficiente impacto en la placa radiográfica, lo que además queda enmascarado por el propio nefrograma; por otra parte al acumularse mayor volumen de orina en la vejiga, procedente de ambos riñones, si bien la moluria yódica no está modificada por ser mayor la masa de orina acumulada, aumenta la absorción de Rayos Röentgen proyectando sombra vesical en la placa radiográfica.

Esta es una interpretación circunstancial del fenómeno, aceptando la hipótesis de la acumulación yódica en las células tubulares como mecanismo causal del ne[illegible]

[illegible]

alérgico, manifestado por hipotensión, lipotimia, vómitos, diaforesis profusa, etc. En estos pacientes, si se impresiona una placa radiográfica poco después de la inyección endovenosa, durante o inmediatamente después de finalizado el ápice de la crisis alérgica, suelen obtenerse perfectos nefrogramas sin pielograma a pesar de que el tiempo transcurrido desde la inyección corresponda al de esta última manifestación urográfica; solamente repitiedo durante largo tiempo (varias horas), la impresión sucesiva de placas radiográficas, se alcanza, aunque tardíamente, a observar tenues imágenes pielocalicilares. Al igual que en el nefrograma por hipofunción, se obtiene perfecto cistograma.

En algunos de estos pacientes, al prolongar la observación roentgenográfica se obtiene le imagen de la vesícula biliar contrastada, reveladora de que el yodo, al no encontrar fácil excreción por los elementos del nefrón, deriva su salida por la glándula hepática. Estos nefrogramas se producen por inhibición de la función del riñón de origen extra-renal y en estas condiciones, si bien una parte de yodo se acumula en las células del tubo proximal durante los primeros momentos de la inyección de contraste, allí queda, y sólo una mínima cantidad de substancia yodada alcanza a traspasar el filtro glomerular, pues dado el descenso súbito de la tensión arterial el fenómeno físico de la filtración se interrumpe; inhibidos ambos riñones, y más o menos saturados de substancia yodada, el resto de ésta, que continúa en la sangre, busca salida, lo que en ocasiones logra a través de la glándula hepática; es decir, se produce un fenómeno [illegible] de ciertas colecistografías [illegible] ción de Biligrafín.

En tales [illegible]

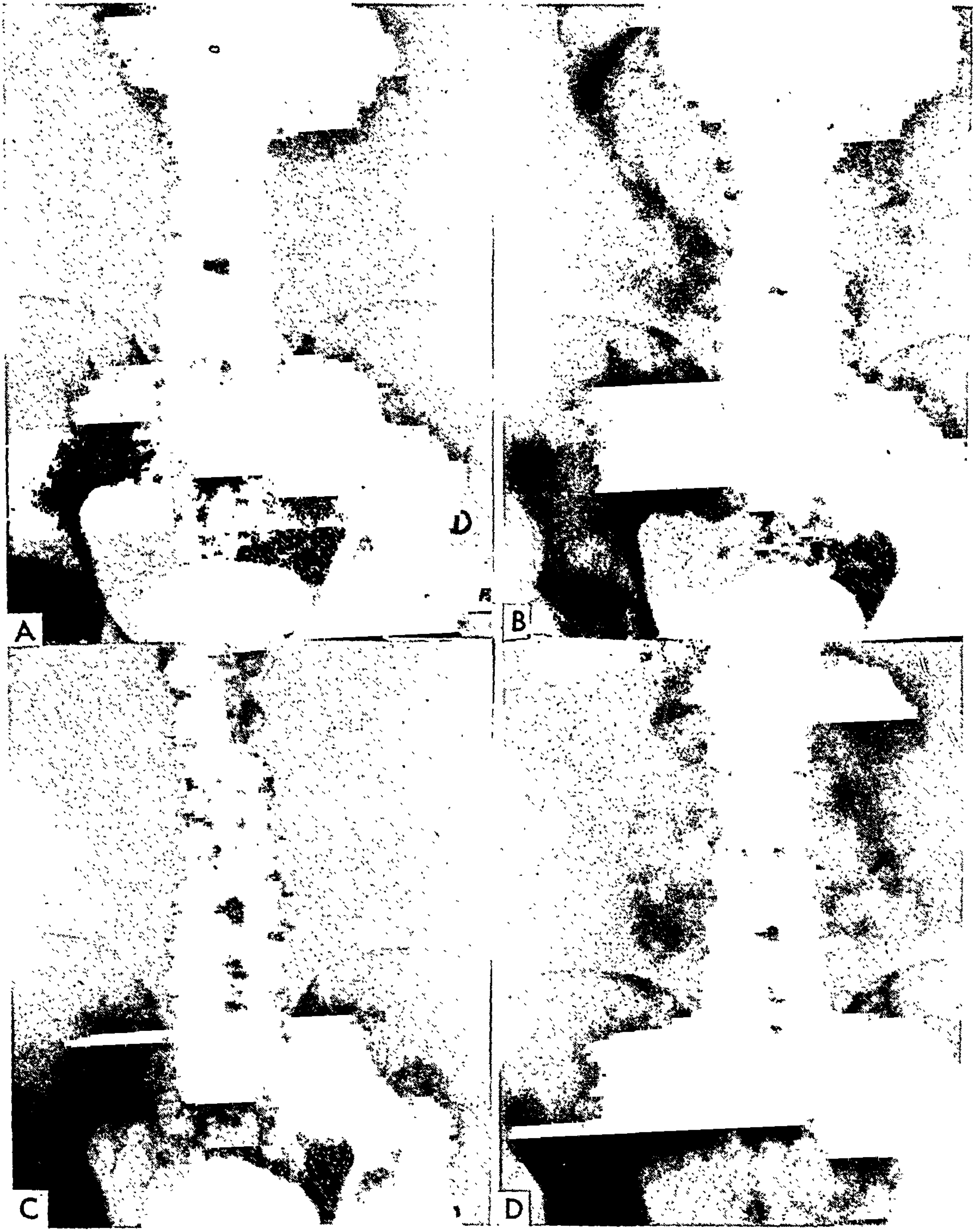

Fig. 4 (H.C. 27487).—*A*, nefropielograma a los 60 minutos. Imagen piélica destacada en el lado derecho; acúmulo de orina yodada en la vejiga; la T.A. Máx. ha remontado a 12. *B*, nefropielograma a los 85 minutos. Superpuesta a la sombra renal se observa la imagen del colecistograma. *C*, nefrograma bilateral a los 180 minutos, habiendo normalizado la T.A. Pielograma derecho al que se superpone la imagen de la vesícula biliar. *D*, nefropielograma bilateral a los 240 minutos. Superpuesta a la imagen pielo-renal derecha, la vesícula biliar de menor volumen, bien contrastada.

ficas con escaso contraste ya que una parte del yodo ha desaparecido de la sangre a través de la glándula hepática. En realidad estos pielogramas se deben al retardo en la excreción del yodo interrumpida por la inhibición funcional del riñón; acaso también en tales condiciones se produce en la célula una acumulación-límite de yodo y entonces a tenor de lo presupuesto por Bertil Josephson y Julia Kallas, cuando en la célula tubular el yodo alcanza el máximo de capacidad retentiva celular (Tm-y), el contraste se extravasa nuevamente a la corriente circulatoria y busca salida a través del hígado como se ha observado.

El tercer tipo de nefrograma por "retención," se produce cuando la emergencia natural de la orina a través del uréter queda súbitamente interrumpida coincidiendo en un riñón con parénquima normal. Tal modalidad de nefrograma ha sido frecuentemente observado y por ello motivo de atención más generalizada. Hace años Hans Hellmer, Boeminghaus y Wolff observaron este fenómeno y el último de estos autores describió la llamada "pielografía blanca, para expresar la ausencia de pielograma con la región piélica más destacada por el contraste del nefrograma, lo que atribuyó a que la *orina sin contraste* retenida en la pelvis y rodeada por la sombra del nefrograma, daba lugar a una laguna más clara.

Collier al revisar los nefrogramas de Hellmer, consideró que la sombra lacunar interna del nefrograma se debía al menor espesor del parénquima renal que constituye las paredes anterior y posterior del seno del riñón que limitan la pelvis renal; [illegible]

[illegible]

con respecto a la valoración del nefrograma, para quien tal imagen expresaba un estado deficitario del riñón cuando en realidad debe ser interpretado en sentido contrario, pues para que el fenómeno de la fijación del yodo en el riñón se produzca para proyectar nefrograma, requiere la integridad funcional de los elementos nobles de la glándula. Para algunos de los autores citados, la obtención del nefrograma durante las fases de obstrucción ureteral, se debe a un mecanismo de retención tubular de la orina, al punto que varios autores (Gouverneur, Hicker, Wesson, Weens, Florence, etc.) han intentado provocar el nefrograma mediante la hiperpresión por distensión piólica a través de un catéter ureteral.

Para Fey y Jeanbreau el dolor del cólico nefrítico desencadena el espasmo del anillo muscular peri-papilar de Henle, y tal mecanismo contribuye a la retención intraparenquimatosa tubular de la orina yodada, la cual contrasta el *riñón sin dar* pielograma.

En realidad cuando el cólico nefrítico por obstrucción, alcanza el ápice doloroso que interrumpe la función excretora del riñón, previamente se ha producido la distensión máxima de la cavidad pielo-calicilar, tal como se revela en pielogramas tardíos al prolongar la exploración de tales pacientes. Precisamente como mecanismo de inhibición renal en estos casos interviene en primer plano la hipertensión pielo-tubular que anula el fenómeno de la filtración glomerular al aumentar la presión intra-capsular y secundariamente se produce la inhibición tubular, por lo cual [illegible] la constricción peri-papilar.

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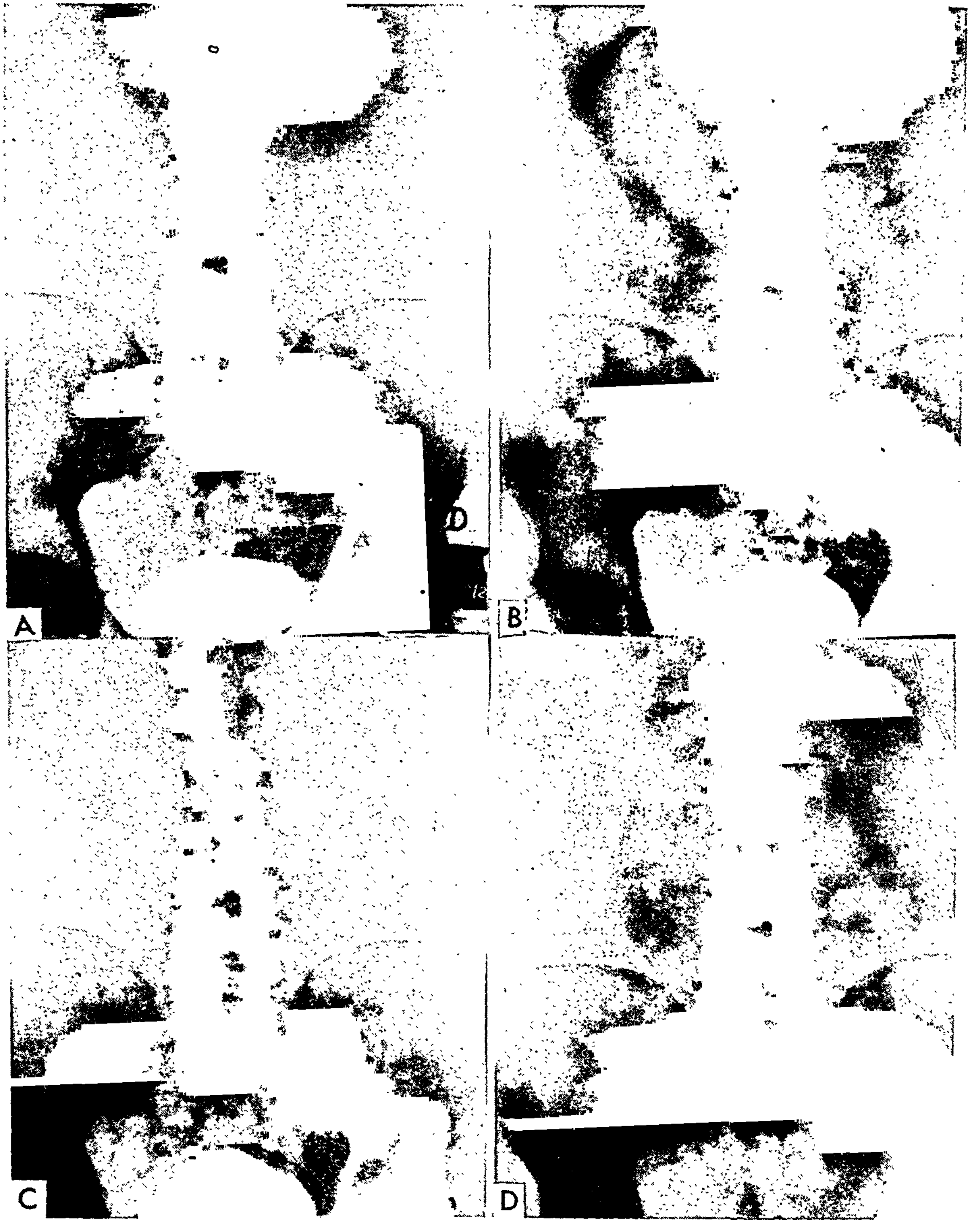

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tal riñón se produce el nefrograma, el otro, abierto a la excreción yódica, si bien proyecta intenso pielograma, no consigue la eliminación de la totalidad del contraste cuya parte alícuota de yodo retiene el riñón obstruído.

El nefrograma unilateral por retención, plantea muchos problemas etiopatogénicos, pero a su vez permite establecer hipótesis más convincentes, las cuales, probablemente facilitarán el camino para el esclarecimiento de la retención renal del yodo como base fundamental del nefrograma para su empleo diagnóstico.

Se presupone que ciertas substancias yodadas (Diodrast, etc.) después de inyectadas en la sangre producen su mayor acumulación en el riñón y en mucha menor cantidad en el hígado, al punto que cuando se inyectan dosis por debajo que de los 4 mgrs. por kilogramo de peso, la acumulación renal que de tal substancia se produce, es superior a la que en encuentra en el plasma que ha recibido la droga. De ello se deduce que la absorción del yodo por el riñón debe ser un fenómeno vital dependiente de su actividad celular, la cual después de haber recibido y fijado el yodo en su intimidad histiocitaria, pasa a excretarlo, lo que pone de manifiesto que la actividad de los elementos celulares del riñón es doble, primeramente la fijación del yodo, y a continuación la excreción.

De ello se deduce que este supuesto fenómeno de actividad celular péxica, requiere un tiempo que por su brevedad, normalmente escapa a nuestra observación habitual, pero que en condiciones patológicas el fenómeno se prolonga, dando motivo a la obtención de nefrograma por la fijación del yodo en el propio riñón retardando la obtención del pielograma.

Esta supuesta función celular que por sus características debe ser localizada entre los elementos del tubo proximal, debe ser comparada al fenómeno de la atrocitosis tubular, descrito por Gerard y Cordier en las células de los tubos renales a incluso en las células de los hipernefromas, fenómeno que se asemeja a lo observado por Heinderneim en los bastones mitocondriales que transportan el carmín

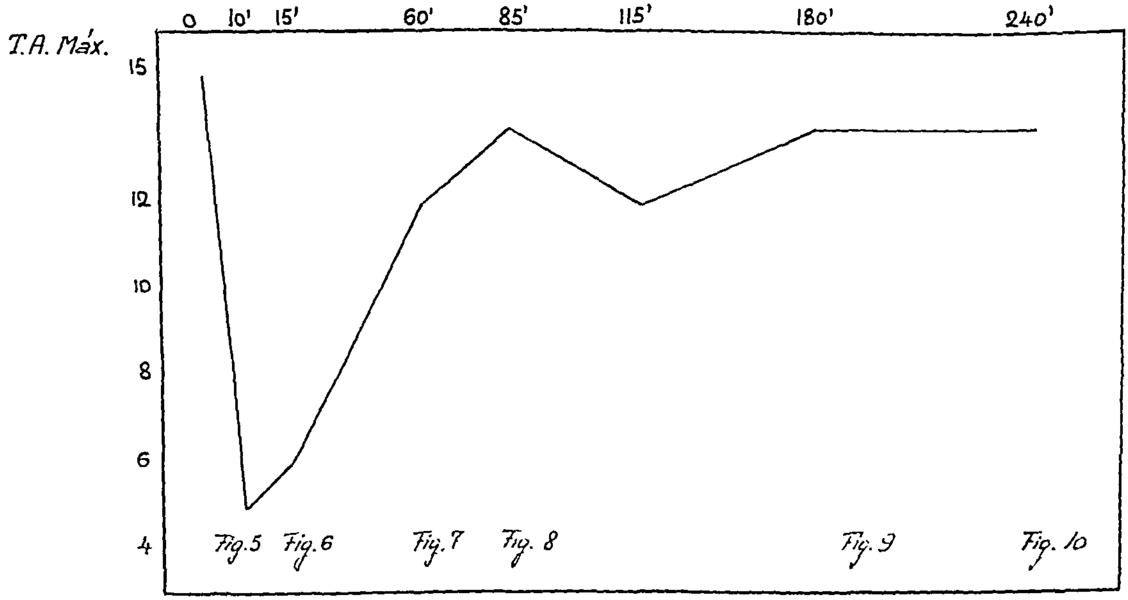

Fig. 5.

de índigo desde la basal celular al extremo apical ciliar para su excreción en el tubo urinífero. En el caso concreto del yodo, se puede atribuir la misión transportadora de éste a través de la célula tubular, a los mitrocondrios de Heinderneim, si bien otros autores opinan que se ocupan de tal transporte enzimas específicos para tal fín, los cuales cargan con la droga y siguen semejante recorrido intra-celular.

Cómo transita el yodo por el riñón hasta su eliminación por la orina, constituye un complejo problema cuyo esclarecimiento dará mucha luz, no solamente a la patoligía del riñón, sino también a su fisiología.

Si presumimos que del yodo orgánico inyectado en la sangre en su tránsito renal, una pequeña parte es filtrada por el glomérulo, pero la mayor cantidad es eliminada por el tubo contorneado proximal, nos interesa sobremanera conocer en qué condiciones normales se produce el fenómeno y especialmente en cuanto tiempo la droga transita por los elementos tubulares, y de ello alcanzar a averiguar los medios para que este tránsito pueda ser regulado artificiosamente hasta el punto de poder obtener, a nuestra voluntad, la imagen radiográfica del riñon impregnado o saturado por el contraste yodado.

Virtualmente el yodo circulante, inyectado con fines urográficos, es fijado por el riñón durante un brevísimo tiempo seguido de su inmediata eliminación, con lo cual el riñon cumple su función excretora y la sangre es sucesivamente limpiada del cuerpo extraño hasta su total eliminación.

transcurrido por el riñón, habrá desaparecido de tal vehículo la totalidad de yodo que al riñón le ha sido posible fijar: éste a su vez, con el fín de continuar su función y tomar de la sangre el resto del yodo circulante, comienza inmediatamente la excreción y dejar lugar para la fijación de nuevas masas de la droga sin llegar a la acumulación patológica.

Así merced a tan rápido mecanismo de fijación y excreción, ambos fenómenos al simultanearse se superponen, no siendo fácil su discriminación y con ello la aparición del yodo en las vías urinarias es inmediata y continuada sin dar lugar a la acumulación renal (nefrograma) y su visualización se produce al alcanzar las vías urinarias dependiente de la acumulación de la orina (rentención pielo-ureteral).

Al distanciarse los fenómenos de fijación y excreción renal es posible le visualización renal y sólo prolongando la observación se obtiene el pielograma, pero en lugar de observar este último durante el ápice normal de la excreción renal (entre los 30 y 60 mits.), sólo se obtiene nefrograma por la acumulación yódica celular y el pielograma se vislumbra más tardiamente, a medida que el fenómeno de excreción tubular se produce.

En condiciones patológicas, este periodo de excreción del yodo se prolonga y como además en tales condiciones, la molaria decrece a bajo grado, la absorción de Rayos X por estas orinas es escasa y no alcanza a proyectar sombra que contraste con los órganos vecinos. Cuando la excreción renal es normal, la imagen del pielograma se destaca en la [illegible] de concentración de yodo [illegible]

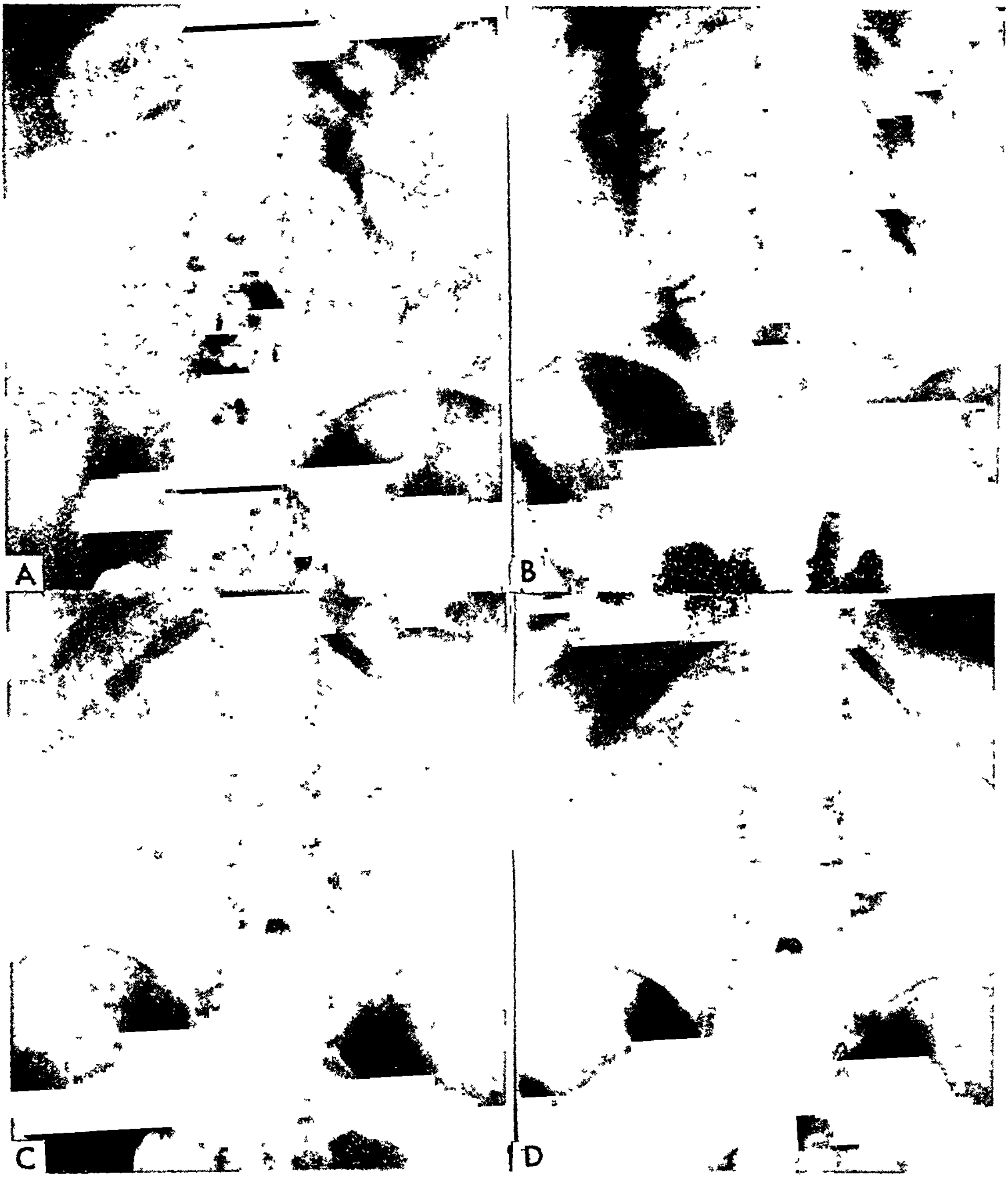

Fig. 6 (H.C. 19854).—*A*, pielograma derecho normal; cistograma nítido y cálculo en uréter terminal izquierdo que obstruye el conducto. Silencio funcional del riñón izdo.; el nefrograma está enmascarado por aereocolia. *B*, pielograma izquierdo a las 32 horas de la inyección del contraste, finalizada la excreción yodada por el R. derecho. *C*, nefropielograma a las 84 horas de la inyección del contraste. Imagen más destacada merced a la desaparición de la aereocolia. *D*, nefropielograma a las 96 horas de la inyección del contraste. Cálculo en uréter terminal izquierdo y cálculo pielocalicilar derecho.

citario se le califica de "mudo" o "silencioso." En muchos casos al prolongar la observación urográfica durante horas, e incluso días, después de la inyección del contraste, se alcanza a visualizar las vías urinarias de dicho riñón "mudo" o "silencioso" en un tiempo posterior al riñon sano, coincidiendo además este fenómeno de retardo con la observación de nefrograma más destacado en riñón deficitario que en el riñón opuesto sano.

Sabido es que cuando uno de los dos riñones está profundamente afectado o anulado, el yodo circulante es totalmente eliminado por el riñón sano en un tiempo prácticamente habitual a semejanza de lo que acontece en el riñón único; pero cuando el riñón afectado que plantea el problema a esclarecer, tiene su función retardada o temporalmente inhibida, entonces se observan los fenómenos señalados que aceptando el concepto del simple tránsito tubular del yodo son de difícil explicación.

Veamos qué ocurre e intentemos explicar el hecho tan evidente observado de la eliminación tardía del yodo. En pacientes con un riñón normal y el otro obstaculizado mecánicamente por bloqueo ureteral, el pielograma se produce con toda normalidad por el primero y en el tiempo habitual la imagen pielo-ureteral crece y decrece hasta desaparecer, signo este último de la total eliminación del yodo por dicho riñón, mientras que por el riñón problema, el enfermo, en igual tiempo no proyecta el correspondiente pielograma, pero sí nefrograma aparecido a poco de la inyección de contraste y que persiste incluso después de desaparecido el pielograma opuesto; en [illegible]

proximal, las cuales dán salida al yodo circulante en la sangre conducido. ¿por una enzima?; cuando tal función no es posible por uno de los dos riñones carente de la suficiente permeabilidad glomerular y tubular, esta masa yódica rechazada por el riñón patológico sigue en la sangre e inmediatamente al nuevo tránsito de ésta con su carga yódica por el riñón opuesto—el sano—, éste compensa la deficiencia del enfermo tomando de la sangre la totalidad restante de substancia yodada para su inmediata excreción tubular; por tanto, según esta interpretación, no sería posible el nefrograma del riñón deficitario y tampoco el pielograma tardío, pues todo el yodo circulante debería haber sido eliminado por el riñón sano en función compensadora vicariante del deficitario.

¿Dónde se acantona pues el yodo, para que, habiendo finalizado el riñón sano su eliminación habitual, aparezca más tarde la imagen pielo-ureteral del opuesto? ¿Dónde quedó retenido el yodo que en su momento oportuno, no pudo traspasar la barrera glomérulo-tubular y pasar con la orina a las vías excretoras, ni tampoco ser recogido por la sangre para su traslado al riñón opuesto funcionante para su inmediata eliminación por éste?

Para que el yodo aparezca tardíamente en la orina de uno de los riñones, finalizada la excreción por el opuesto, es necesario que esta droga se acantone en un lugar de su tránsito normal por un mecanismo activo de fijación en espera de su excreción, sin que pueda ser retirado de su acantonamiento por la sangre circulante.

[illegible]

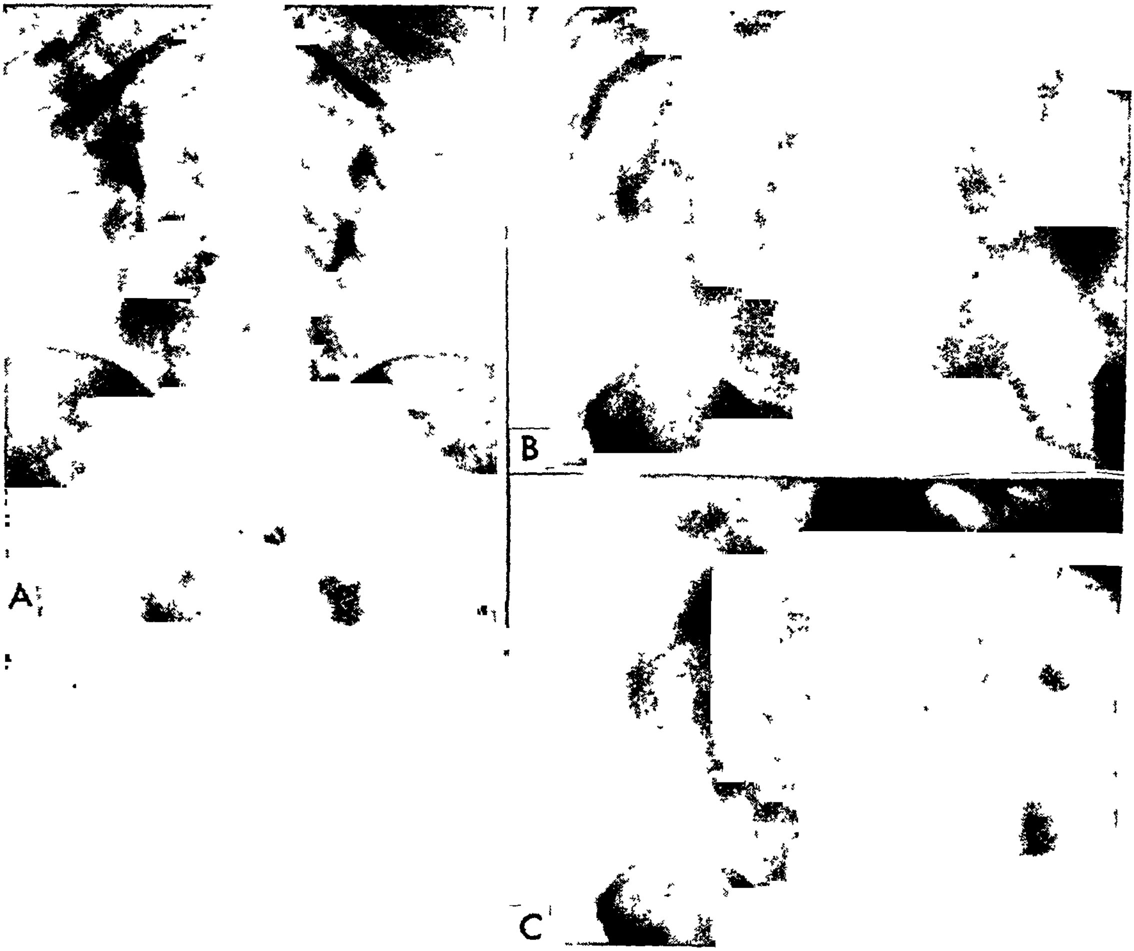

Fig. 7 (H.C. 19854).—*A*, nefropielograma bilateral a los 12 minutos, restablecido el enfermo después de la expulsión del cálculo ureteral izdo. *B*, nefropielograma izquierdo a las 6 horas de la inyección del contraste, habiendo finalizado la excreción yodada por el R. derecho. *C*, nefropielograma izquierdo a las 10 horas y media de la inyección del contraste, habiendo finalizado la excreción yodada por el R. derecho.

por el hígado; así no habría lugar a la excreción tardía por el riñón deficitario que presenta nefrograma retentivo, pues el riñón sano eliminaría de la sangre todo el yodo sin dar lugar a que se observasen signos tardíos de eliminación de contraste en las vías proyectando pielograma el riñón deficitario.

Para Narath, el almacenamiento yódico puede ser intratubular e incluso intracelular. En el primer supuesto la retención intratubular del yodo tendría menor interés, pues el contraste en la luz tubular traspasaría el umbral renal parenquimatoso y se situaría en las vías urinarias; además la masa yódica intratubular sería prontamente diluída por la orina, no siendo posible la persistencia prolongada del pielograma y sólo podría dar lugar al nefrograma.

Según el supuesto de Smith, de la acumulación intersticial, el yodo se comportaría a semejanza de cuando se provoca el bloqueo tubular renal por "competición" para impedir la rápida eliminación por el tubo renal de los antibióticos circulantes en la sangre, con lo cual estas drogas persisten en el organismo por un mayor tiempo, prolongando su acción terapéutica, merced a su lenta eliminación por el riñón. Este mecanismo de competición o de bloqueo del trabajo excretor tubular por otra substancia, no es aceptable para explicar la retención renal del yodo, pues en el supuesto de que el fenómeno de competición se produzca sólo en el riñón enfermo, el yodo, al continuar circulante en la sangre, sería excretado por el riñón opuesto sano y no habría lugar a excreción tardía por el órgano enfermo, tal como ha sido observado. Además tal fenómeno ha sido ya provocado experimentalmente mediante la carinamida, con la particularidad, que inyectando el yodo después de aquélla, el contraste no entra en la célula tubular, y si la administración se invierte dando tiempo a que el yodo se acumule en la célula renal, la subsiguiente administración de carcinamida frena la excreción y el yodo renal no pasa a la orina, como ha sido observado por Josephson y Kallas.

A. Engstrom y B. Josephson, estudiaron mediante histo-radiografía directa de cortes micrométricos de riñón de conejo, la localización histocítica del Diodrast previamente inyectado por vía venosa; pudieron observar en las histo-radiografías que el yodo se acumula de preferencia y en cantidad maxima en las células tubulares, y con gran diferencia en menos, en los glomerulos, como puede apreciarse en las figuras adjuntas

Para tales estudios, los citados autores, inyectaron en los conejos cantidades variables de yodo por kg de peso del animal, sacrificándolos entre los [illegible] y 60 minutos [illegible]

nefrón y comprobaron que el yodo se encontraba en mayor cantidad en las células tubulares en función de la dosis inyectada y del acúmulo, éste último dependiente del transporte tubular máximo.

La marcada preferencia del yodo para la célula tubular, que tan destacadamente se revela en estas histo-radiografías, así como la retención celular que la prueba de competición mediante la prueba de carinamida, han observado Josephson y Kallas, constituye el punto central de la cuestión a estudiar, y de este tránsito celular depende la eliminación retardada del yodo previamente supeditada a una acción inicial y fundamental de fijación de éste por las células del tubo proximal hasta alcanzar la acumulación máxima, que acaso puede corresponder a la carga tubular o fijación celular máxima en función de tiempo.

En diferentes P.D. se ha constatado que la eliminación renal del yodo sufre retardo, al punto que 48 horas después de la inyección del contraste, cuando los vestigios de excreción por un riñón han desaparecido, se obtiene pielograma por el riñón opuesto, que en el comienzo de la prueba, ha mostrado un nefrograma muy destacado exponente de la fijación previa del yodo en dicho riñón.

¿Cómo explicar esta lentitud o retardo en la excreción renal? Es indudable que si el yodo inyectado se elimina en su mayor parte por filtración glomerular y por un hecho puramente físico, no se produciría retención renal de este [illegible] barrera tubular, sería excretado por el sano sin dar lugar al nefrograma del primero. Si la eliminación por filtraje glomerular de esta masa de yodo fuese cierta, que no lo es, la retención sería intra-tubular, es decir dentro de la vía de excreción, en cuyo caso cabría pensar en la posibilidad de un fenómeno de absorción semejante, aunque a la inversa topográfica, al de competición, pues una parte muy importante del yodo retenido sería reabsorbido en las vías obstruídas y trasladado por la sangre al riñón opuesto para su eliminación, según ha demostrado Boeminghaus. De ello deducimos, que tanto en el espacio intersticial inter-tubular, como en la propia luz tubular, el yodo no puede permanecer estacionado por mucho tiempo, pues la corriente circulatoria procedería a su traslado para ser eliminado del organismo a través del riñón opuesto permeable. Por otra parte los experimentos citados por Josephson y Kallas confirman el aserto en otro sentido.

En observaciones clínicas urográficas, finalizada la eliminación del contraste por el riñón sano la excreción por el enfermo se retarda apareciendo el pielograma horas e incluso días después de desaparecido el pielograma del riñón sano. Si fuese cierto que el contraste quedase retenido en las vías (canaliculares y cálices) al producirse la reabsorción local demostrada por Boeminghaus, la imagen pielo-renal tardía del riñón enfermo no se produciría. Descartado el fenómeno de la competición tubular, la retención o acantonamiento del yodo débese buscar en un lugar de permanencia prolongada, entre la luz y el intersticio tubular y que sólo puede ser la propia célula del tubo urinífero que fija el yodo, por la cual transita y es excretado con la orina.

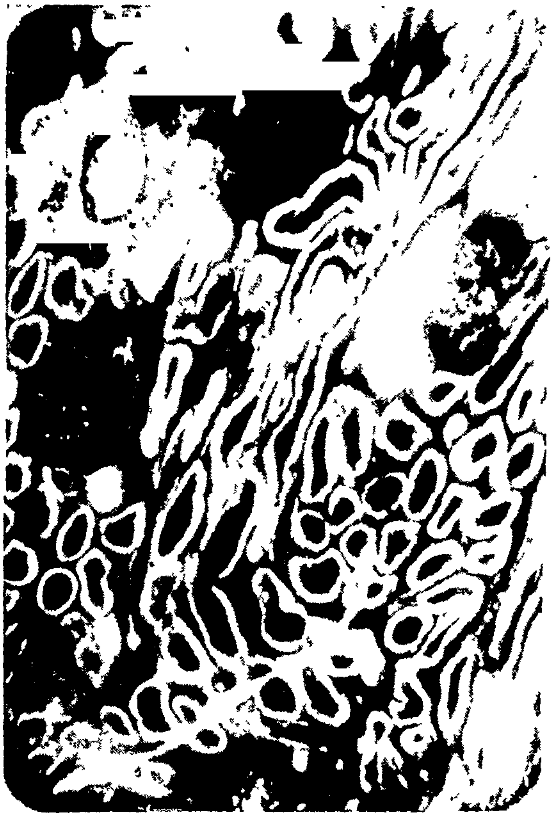

Fig. 8.—Celulas tubulares radio-opacas por absorción del Diodrast en franco contraste con la menor opacidad del ovillo glomerular. Ausencia del contraste en la luz tubular. (Micro-histo-radiografías cedidas por *B. Josephson.*)

Si aceptamos por exclusión que el yodo no se acantona en un depósito accidental, sino que la célula tubular lo absorbe de la sangre y fija para su excreción secundaria, se trata de un fenómeno de trabajo activo celular que en condiciones normales se produce con tal rapidez que con los medios actuales no podemos constatar con exactitud, pero que en ciertas condiciones patológicas en que la función celular se retrasa o realiza con lentitud, este supuesto fenómeno de "Yodopexia celular" del riñón al prolongarse, hace apreciable el nefrograma y se confirma con la tardía aparición del pielograma, cuando por el riñón opuesto la excreción celular normal ya cesó. De ello se deduce el fenómeno de "Yodopexia celular" exponente de una actividad de la célula tubular que presuponemos a la luz de las observaciones urográficas.

Nuestros conocimientos actuales acerca la función normal renal, los deducimos de la presencia o ausencia de la imagen proyectada por el molde pielo-calicilar, por la absorción de las Rayos X, dependiente de la concentración yódica y por las modificaciones morfológicas de la imagen, quedando nuestra fuente informativa limitada por la barrera constituída por el área cribosa papilar que se intepone entre las cavidades colectoras de la orina y el parénquima. Todo cuanto por detrás de esta barrera acontece durante la excreción del yodo inyectado con fines diagnóstico, es poco conocido y nuestras presunciones las deducimos de las modificaciones pielo-calicilares que constituyen el espejo en el que se reflejan las alteraciones renales.

Nuestro empeño debe ser orientado como primer paso en el esclarecimiento del mecanismo de fijación y excreción del yodo por el riñón, tanto en estado normal como en condiciones patológicas minimas, en que la función está temporalmente alterada y no se encuentra suficientemente modificada o inhibida que imposibilite la eliminación del contraste yódico y la lentitud funcional propia del órgano enfermo facilita la percepción de intimos fenómenos renales imposibles de apreciar en condiciones normales por su rápidez, con los actuales medios de investigación.

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> Water from snow and ice is always harmful because, once it has been frozen, it never regains its previous quality. The light, sweet and sparkling part of it is separated and vanishes leaving only the muddiest and heaviest part. You may prove this, if you wish, by measuring some water into a jar and then leaving it out in the open air on a winter's night in the coldest spot you can find. Next morning bring it back into the warmth again and, when it has thawed, measure it a second time. You will find the quantity considerably less. This shows that in the process of freezing, the lightest and finest part has been dried up and lost, for the heaviest and densest part could not disappear thus. For this reason I consider such water to be the most harmful for all purposes.
>
> —*Hippocrates*

Indicaciones Actuales de la Canalizacion en la Colecistectomia

(Indications for Drainage in Cholecystectomy)

FRANCISCO FONSECA, M.D., F.I.C.S. (Hon.)

MEXICO D. F., MEXICO

The indications for drainage after cholecystectomy are discussed and the arguments against it analyzed. The author maintains that if the operative technic is adequate (satisfactory ligature of the cystic duct and the cystic artery and care in the handling of hepatic tissue), and if gelfoam is used to cover the gallbladder bed and the pedicles, drainage is unnecessary. In his experience cholecystectomy without drainage has prevented a great many undesirable postoperative sequelae. His opinion is based on the results of 193 cholecystectomies with drainage, performed at the General Hospital, the French Hospital and the Central Surgical Service of Mexico City.

DESDE el año de 1866 en que Courvoisier hizo la primera colecistectomia subserosa y suturó el abdomen sin dejar canalización se sucitó el problema de las indicaciones de ésta en la colecistectomia. Han transcurrido casi noventa años y todavia hoy en 1958 continúa sin resolverse definitivamente ésta situación quirúrgica. Es por esto que decidi traer ante ustedes mi experiencia personal en los últimos años para contribuir con éste pequeño esfuerzo a resolver una situación que en mi concepto debe quedar establecida definitivamente. Mi deseo es que discutiéndose esto en el seno de éste XI Congreso Internacional de Cirujanos se llegue a una conclusión precisa y quizas definitiva.

Sin que yo me lo explique claramente en el caso específico de la colecistectomia muchos cirujanos eminentes de mi País y del Extranjero continuan empleando sistematicamente la canalización en todos los operados de colecistectomia. Después de la hazaña extraordinaria de Courvoisier en 1866, Rotter y Golman pusieron gran empeño en precisar las indicaciones de [illegible] que cuando se efectuaba la peritonización total de la superficie [illegible]

factoria del cístico no se necesita canalizar. Después se produjo una corriente favorable a la no canalización con partidarios tan eminentes como Rotter, [illegible] Haberer. [illegible]

El célebre cirujano Italiano Profesor Donati en ese mismo Congreso se declara partidario de ésta misma técnica y concluye que el éxito depende de una técnica operatoria precisa y metódica y presenta una serie de veintisiete casos operados con excelentes resultados.

El método sigue siendo aceptado y a la lista de Cirujanos que lo practican se agregan los nombre de Chiasserini, Alessandri, Babbini, Giulani, Gullotta y Leo en Italia.

Entonces surge el eminente Cirujano Pribam que practica la carbonización de la mucosa de la vesicula biliar cuando no puede practicar la colecistectomia subserosa y cierra el abdomen sin canalización.

Posteriormente Thorek sustituye la carbonización por la electrocoagulación y sigue practicando la no canalización.

Ya entonces se comprende que no solamente pueden dejarse sin canalizar los casos en que la peritonización sea perfecta sino otros en que este requisito no pueda llenarse.

En 1933 Mirizzi publica su magnifica monografia sobre la colecistectomia subserosa sin canalización afirmando "que los progresos de la técnica aumentan el número de éxitos y facilitan la práctica del método, dando en una palabra mayor seguridad."

Prat en 1954 en su obra El Drenaje en Cirugia dice textualmente: "El anhelo y afan de los Cirujanos de perfeccionar la terapeútica quirúrgica de las vias biliares influyó para que se preocuparan de suprimir el drenaje, que a veces es necesario y a menudo indispensable, no deja de ser un factor de imperfección de la operación, que algunos catalogan como un elemento de la enfermedad operatoria o 'enfermedad del drenaje.' Es por eso que muchos cirujanos se preocuparon de suprimir el drenaje biliar y en primera linea figura Pribam en esta orientación y también Mirizzi . . . y más adelante continua: Es digno destacar que toda la Cirugia Mundial tiene el deseo y la aspiración del progreso quirúrgico y la supresión del drenaje cuenta como una de las principales inquietudes y si no ha sido suprimido totalmente, ello se debe, como lo comprobamos ya, en el drenaje del hepatocolédoco, por el temor que tienen los Cirujanos de que al realizar un perfeccionamiento técnico se haga en perjuicio de la seguridad de la vida del paciente."

Los Cirujanos contrarios a estas ideas reprochaban al procedimiento 1° el peligro del coleperitoneo; 2° la infección y la peritonitis derivada de ello; 3° el hemoperitoneo.

El coleperitoneo puede presentarse por safadura o deslizamiento de la ligadura del cistico, por aumento de la tensión de los canales biliares.

Otras veces se produce, dicen estos autores, por necrosis del muñon del cistico, en el sitio de la ligadura, porque su vitalidad se disminuye por la pérdida de su envoltura célulo-peritoneal.

En otras ocasiones es la lesión de un conducto biliar accesorio que en forma anómala puede presentarse en el lecho hepático de la vesicula y no ser reconocido como tal.

El coleperitoneo también podria presentarse por goteo biliar por lesión del parenquima hepático cuando no se respeta la lámina célulo-fibrosa que separa la vesícula del tejido hepático.

También puede producirse por herida de las vias biliares extrahepáticas en el momento de la disección del pedículo.

El segundo inconveniente señalado por los autores contrarios a la colecistectomia sin canalización es la infección que se produce cuando en el curso de la intervención se vierte el contenido de la vesicula infectada en el peritoneo lo que podriá traer posteriormente una peritonitis.

Finalmente se habla también del hemoperitoneo debido a la safadura de la ligadura del muñon de la arteria cistica o a hemorragia del tejido hepático del lecho vesicular.

Analisando estos inconvenientes veremos que es necesario que los Cirujanos que actuen sobre vias biliares esten lo suficientemente entrenados para evitar los y entonces en muy contadas ocasiones se verán precisados a utilizar la canalización después de la colecistectomia.

La colecistectomia sin drenaje ofrece muchas ventajas que nos hacen fervientes partidarios de ella y desear que cada dia se generalise más esta técnica en beneficio de los enfermos.

Como dice Mirizzi "una de las esperanzas puestas en la colecistectomia sin drenaje ha sido la supresión, la limitación de las adherencias o al menos si su formación es inevitable, su incapacidad de producir dolores y trastornos mecánicos."

Davis afirma que las adherencias postoperatorias gozan un papel importante en las secuelas de la colecistectomia y según él la causa de su producción es el drenaje sub-hepático y la hemostasia imperfecta.

Mirizzi cree que esta afirmación es excesiva pues existen otras causas productoras de secuelas, pero esta de acuerdo en que en la colecistectomia con canalización se producen a no dudarlo más adherencias.

Desmarest dice que las adherencias epiploicas desempeñan un papel importante en la génesis de los dolores tardios de la colecistectomia con drenaje y piensa que el único medio de evitar el sindrome doloroso punto de partida frecuente de una verdadera enfermedad, es practicar la colecistectomia subserosa seguida de la sutura de la laparotomia sin colocar drenaje.

Las adherencias son también susceptibles de [illegible] trastornos mecánicos. El [illegible]

colecistectomia con canalización, las oclusiones que la siguen son raras, sin embargo los hechos confirman que a pesar de esta baja frecuencia, la canalización influye sin lugar a duda en la producción de estas. Todos estos hechos son los que hacen afirmar a Mirizzi que la colecistectomia ideal, como él la llama, no evita de una manera absoluta la formación de adherencias pero la limita grandemente sobre todo en los predispuestos.

Otra de las ventajas del procedimiento es el evitar las hemorragias postoperatorias que se producen en el momento de retirar la canalización pues es bien sabido que la mayor parte de estos enfermos son insuficientes hepáticos y predispuestos a las hemorragias. Estas pérdidas sanguineas algunas veces pueden ser bastante abundantes, incluso para poner en peligro la vida del enfermo y necesitar transfusión sanguinea de urgencia, y en algunas ocasiones incluso, una segunda intervención al no poder controlar la hemorragia por el orificio de la canalización.

Esto es particularmente importante cuando el cirujano sabe previamente de esta insuficiencia o existe una ictericia reciente lo que hará comprender facilmente la utilidad que tiene la supresión de la canalización en estos enfermos; de ello resulta que la sutura completa de la cavidad peritoneal después de la colecistectomia evita una complicación grave y da una mayor seguridad desde el punto de vista de la evolución postoperatoria.

Por otra parte se sabe que la sutura completa de la herida de la laparotomia es la mejor profilaxis de la eventración. En todos los enfermos en que la pared ha sido cerrada sin canalización [illegible] periodo postoperatorio tomia sin drenaje.

Se puede decir en términos generales que la colecistectomia ideal o sin canalización está indicada en todos los casos en que la enfermedad litiásica se encuentra en su fase vesicular, de donde se deduce que es muy importante actuar con un diagnóstico preciso y con el conocimiento lo más exacto posible del estado de las vias biliares antes de la intervención. Actualmente se cuenta con medio de contraste extraordinarios como el biligrafin que pueden ayudar grandemente al conocimiento del estado fisico y funcional de las vias biliares antes de la intervención.

En resumen: Podemos afirmar que en el año de 1958 se deberá practicar la colecistectomia sin canalización en todos los casos, primero, en que la enfermedad litiásica se encuentre en su fase vesicular e incluimos en esto los casos de vesiculas escleroatróficas, de hidrocolecistos y de piocolecistos incluso con adherencias que hayan bloqueado el espacio subhepático.

Creemos que sin canalización se obtienen evoluciones más rápidas y satisfactorias, se evita el peligro de las hemorragias al retirar el drenaje y también las eventraciones y la mayor parte de las secuelas postoperatorias que son a no dudarlo debido a las adherencias.

En mi práctica personal en los últimos años he podido efectuar ciento noventa y tres colecistectomias sin canalización, con resultados satisfactorios, con evolución postoperatoria buena y con un porcentaje mínimo, no mayor de dos por ciento de secuelas postoperatorias dolorosas que han podido ser tratadas facilmente. En ninguno de los casos ha habido necesidad de reoperar lo que considero extraordinario al comparar con estadisticas de colecistectomias con canalización en que las secuelas postoperatorias graves llegan frecuentemente a un diez por ciento y en muchos casos obligan al cirujano a una segunda intervención.

En todos mis operados uso un empaque de Gelatina purificada (Gelfoam) para cubrir el lecho vesicular y el pediculo del cistico y de la arteria cistica y en todos he obtenido magnificos resultados sin tener un solo caso de coleperitoneo o de hemoperitoneo.

Los casos operados han sido de colecistitis crónicas calculosas, vesiculas escleroatróficas, hidrocolecistos y piocolecistos.

Posiblemente por el uso de los antibióticos en los últimos años no he tenido oportunidad de encontrar ni colecistitis gangrenosas ni perforaciones de la vesicula.

Estos enfermos han sido operados en el Hospital General, Pabellón 3 y Pabellón Gastón Melo, en el Hospital Frances y en la Central Quirúrgica de la Ciudad de México.

CONCLUSIONES

1. En este trabajo se hace historia en relación con las indicaciones de la canalización después de la colecistectomia.
2. Se analizan los argumentos en contra de la canalización sistemática después de la colecistectomia.
3. Se sostiene que cuando existe una buena técnica operatoria (ligadura satisfactoria del conducto cistico, de la arteria cistica y respeto al tejido glandular hepático) y se utiliza Gelfoam para cubrir el lecho hepático de la vesicula y los pedículos no es necesario canalizar después de la colecistectomia aún cuando se trate de casos de piocolecisto.
4. Se afirma que con la técnica de colecistectomia sin canalización se disminuye un gran porcentaje de secuelas postoperatorias.
5. Se fundamenta todo esto en el resultado de ciento noventa y tres colecistectomias sin canalización operadas en el Hospital General (Pabellón 3 y Pabellón Gaston Melo), Central Quirúrgica y Hospital Frances de México.

El Uso de la Sonda de Cattell en Cirugia Biliar

(Use of Cattell's Sound in Biliary Surgery)

FRANCISCO PUENTE PEREDA, M.D.

MEXICO D. F., MEXICO

CUANDO se abre el colédoco para extraer cálculos de su interior o simplemente para explorar el contenido de las vías biliares extrahepáticas, en vez de hacer la sutura directa de la brecha coledociana, se acostumbra canalizar temporalmente dicho canal mediante la colocación de una sonda en T con las ramas cortas dentro del canal y la rama larga hacia el exterior, por donde escurrira la bilis y por donde se puede hacer el control radiográfico de los canales mediante la inyección de una sustancia radiopaca.

The number of patients with postoperative complications following surgical treatment of the gallbladder and bile ducts increases every day. The commonest of these are recurrence of stones in the common duct, fibrosis of the ampulla of Vater, and traumatic stricture of the common duct.

To prevent these conditions the author recommends careful surgical handling, operative cholangiography, [illegible] of Vater's ampulla with [illegible] dilators up to No. [illegible] and the use of the long Cattell T tube. [illegible]

La sonda usada para ese fin ha sido la de Kerr, cuya rama transversal mide 10 cm., y la longitudinal partiendo a 90° del centro de ésta, tiene una longitud aproximada de 35 cm. Esta sonda ha sido modificada por diversos autores para facilitar su empleo, dando diversos ángulos a la entrada de la porción vertical en la transversal, o como en el caso de la sonda ideada por Maingot, haciendo que la porción transversal de la sonda sea unicamente una canaladura, lo que facilita su extracción posterior.

Sin embargo, la sonda ideada por Cattell tiene una diferencia fundamental, que consiste en que las ramas transversales son tan largas como la rama vertical, y está ideada para que la porción superior de la rama intracanalicularque va a quedar en contacto con el conducto hepático se recorte a la longitud necesaria de acuerdo con el enfermo, y que la rama inferior que va a llegar hacia la porción distal del colédoco, atraviese el ámpula de Vater y entre al duodeno en una buena extensión.

Esta sonda garantica así la canalización de la bilis en el duodeno, sin que haya el riesgo de un mal funcionamiento [illegible] riano, durante el tiempo que [illegible] cada, y disminuye [illegible]

En forma [illegible]

Read at the Tenth Biennial International Congress, International College of Surgeons, Mexico D. F., Mexico, Feb. 24-28, 1957.

Submitted for publication Jul. 9, 1957.

Bakes como tiempo preliminar a su colacación, con lo que se hace una mejor cirugía de la región. Sus indicaciones especiales son:

Ictericia obstructiva.

Fibrosis o estenosis del esfinter de Oddi.

Cálculos residuales de colédoco.

Reconstrucción de vías biliares postquirúrgica.

1. Ictericia Obstructiva.

En éstos casos, en los que frecuentemente se encuentra un cálculo enclavado en el ámpula de Vater, además de otro número variable de cálculos en el interior del colédoco y hepático, se practica la coledocostomía en la forma usual, se extraen los cálculos del interior de los canales con lapinza de cálculo, y si no es posible hacer la extracción final del cálculo enclavado a través de la brecha coledociana, se deberá abrir el duodeno en su segunda porción, para hacer a la vista la dilatación de la papila, la extracción del cálculo enclavado, si es necesario previa esfinterotomía, y finalmente dilatar con los dilatadores de Bakes el ámpula hasta obterner un calibre suficiente. Una vez que se ha obtenido la limpieza total del canal con suero y que se está seguro de que no queda ningún cálculo, se pasa la rama larga de la sonda de Cattell por la coledocostomía y se atraviesa por el ámpula de Vater hacia el interior del duodeno; se corta al tamaño la rama superior y se introduce en el hepático común y a continuación se sutura la brecha duodenal mediante sutura transversal en dos planos y se sutura la coledocostomía a los lados de la sonda con puntos totales, perpendiculares a la incisión.

Se ha visto que cuando se hacen maniobras bruscas para dilatar el esfinter de Oddi y el ámpula de Vater por estar poco permeables debido a edema inflamatorio, se presentan pequeñas hemorragias submucosas que posteriormente dejan una cicatríz que puede estenosar dicha región aún más que antes hacer la dilatación forzada. Por lo tanto el paso de la sonda de Cattell sirve de molde a la cicatrización, obligando a que la fibrosis deje un calibre suficiente para el escurrimiento correcto de la bilis al duodeno. Para obtener éste resultado, la sonda debe permanecer un tiempo largo en su sitio, actuando como mandrin del sitio traumatizado. Este tiempo puede ser de 6 a 12 meses y aún más tiempo si es necesario.

2. Fibrosis o estenosis del Oddi.

En todos los casos operados de vías biliares se debe tener principalmente cuidado en explorar la entrada del colédoco en el duodeno, para estar seguros de que esa zona es permeable, o de no serlo saber el grado de estrechamiento y si éste es reducible facìlmente. Para ello se hace uso del juego graduado de dilatadores de Bakes en forma progresiva. Cuando la estenosis no permita elpaso de los dilatadores con facilidad, no hay que hacer maniobras bruscas innecesarias, pues existe el riesgo de producir una falsa vía en el colédoco perforante hacia cavidad abdominal, que puede producir graves complicaciones al enfermo. Cuando la dilatación no sea maniobra fácil se deberá abrir el duodeno para hacer la revisión visual del ámpula y la dilatación a la vista de la zona angustiada hasta obtener un calibre correcto, pasando como en el caso mencionado antes la rama larga de la sonda de Cattell a duodeno, y suturando las heridas duodenal y coledociana.

3. Cálculos residuales de colédoco.

Esta que es una de las complicaciones frecuentes en la cirugía de vías biliares, es sin duda la preocupación constante del cirujano cuando efectúa una colecistectomía, sobre todo en los casos en que se encuentran cálculo vesiculares pequeños y canal cístico dilatado.

Este tipo de complicaciones ha disminuido en nuestr práctica por dos causas principales:

a) empleo de la colangiografía operatoria, y

b) exploración sistemática del ámpula de Vater y dilatación amplia de la misma en los casos de coledocoliatisis, con empleo posterior de la sonda en T larga de Cattell.

Como en los casos anteriores, no hay que vacilar en practicar una duodenostomía si existe duda repecto al estado de permeabilidad de la papila Vateriana. Más vale hacer una operación un poco más amplia que tener que reoperar al enfermo para extraer un cálculo residual. Desde luego, usando la colangiografía operatoria, se debe hacer una placa de control con sustancia de contraste después de colocada la sonda en T para revisión final.

4. Reconstrucción de vías biliares. Estenosis traumática de colédoco.

Esta es sin duda una de las indicaciones precisas del empleo de la sonda de Cattell, principalmente cuando se hace una reconstrucción directa del canal estenosado mediante anastomosis termino-terminal, pues en ese caso la sonda garantiza la protección de la sutura tanto por la falta de tensión dentro del canal al forzar la bilis al duodeno como por servir de molde para la cicatrización. En éste caso deberá estar en su sitio un mímimo de 12 meses.

Para el manejo de la sonda de Cattell hay que recordar que la porción intraduodenal puede taparse con facilidad por estar en contacto con el paso de los alimentos, por lo que en los casos de estadía prolongada de la sonda es necesaria la irrigación frecuente de la misma para evitar que se tape, pues entonces su efecto podría ser contraproducente.

Las placas de control posoperatorio se hacen a través de ésta sonda igual que con cualquier otra sonda en T y su extracción no ofrece mayores dificultades que las que se presentan para extraer una sonda de rama corta.

CONCLUSIONES

Cada día es mayor el número de enfermos operados de litiasis vesicular que presentan posteriormente trastornos, debidos ya sea a litiasis residual del colédoco, a fibrosis del ámpula de Vater, o a estenosis traumática del colédoco.

Para evitar estos trastornos tan serios para el enfermo se recomienda: cirugía cuidadosa, colangiografia operatoria, dilatación sistemática del ámpula de Vater y el empleo de la sonda en T larga de Cattell.

Llevando a cabo los postulados enunciados antes, vemos como disminuye el llamado síndrome post-colecistectomia.

five or six lectures on anatomy were then given each night in London during the winter session. Cecil Wall has noted that "in this year William Hunter took over Samuel Sharpe's lectures to the Society of Naval Surgeons and, by introducing the Parisian system of practical dissection, soon developed a flourishing school. It is said that in 1748 he had twenty pupils and in 1756 more than a hundred." This was the beginning of the famous Windmill Street School, with which we associate the names of the Hunter brothers and those of Hewson, Cruikshank, Abernethy, Cooper and Bell.

The Windmill Street School, though by far the best known of such establishments, was not alone in the work and did not open a new field of endeavor. J. F. South and Cecil Wall have traced the varying status of the anatomic lectures provided by the College itself, and while it must be admitted that the College did not in fact rival private enterprise in this regard, it did take official cognizance of the importance of anatomy and contribute, in early times somewhat falteringly, to what may be called the "basic science training" of the surgeon.

Samuel Sharpe, who has been mentioned as William Hunter's immediate predecessor in the teaching of anatomy, was one of the favorite pupils of the great William Cheselden, himself the author of anatomic works, one of which remained a popular text for many years. Osteology was Cheselden's special province, but he continues memorable for his surgical contributions to the practice of lithotomy and to ophthalmology. It was in ophthalmology that Sharpe particularly excelled.

In the course of the eighteenth century the strong anatomic tradition of British surgery became well established. Oxford had slumbered peacefully in undiminished respect for Hippocrates, Galen and Avicenna, but even Oxford underwent an anatomic awakening. Meantime the London schools of anatomy, most of which began in private hands but gradually became associated with the medical schools growing up around the great teaching hospitals, were rivaled in eminence by Edinburgh lecture theaters and laboratories.

One of the principal areas in which British advances in practical surgery were evident was the area explored by John Hunter in introducing his famous operation for popliteal aneurysm. It was not long before his pupils, Abernethy, Cooper and others, were successfully tying this major vessel and that, usually under emergency circumstances; the culmination of the trend was reached in Cooper's ligations of the abdominal portion of the aorta. In this, as in the other branches of surgery they practiced, the pupils of John Hunter went to work with great speed and assurance, fortified by a knowledge of anatomy probably much more extensive and exact, on the whole, than that of their present-day successors. As Cooper's works on the breast and on hernia suffice to indicate, they made themselves the masters of surgical anatomy in special areas with the object of performing good elective work too. But Cooper, the master surgeon-anatomist of his time, never neglected to keep fresh his acquaintance will all parts of the body, and it is said that he hardly passed a day without dissecting.

One of the striking features of the *De Motu Cordis* of William Harvey is the astonishingly large number of different species of animals his researches led him to dissect. England later developed a notable school of comparative anatomists, with John Hunter occupying the preeminent position. Hunter, like Cuvier after him, hoped that the comparative study of many classes of animals would lead to important results in physiology. He himself pursued other avenues of approach as well. His experimental work threw some light on various aspects of physiology and pathology, and he even made a beginning in the study of endocrinology. Unluckily, many of his disciples restricted themselves almost completely to morphologic researches, supplementing their work of this kind with much speculation in the vein of Hunter. Reinforced by the growing national sentiment of antivivisectionism, both within and without the profession, this resulted in a too exclusive reliance on anatomy.

"In the animal body," wrote Sir Charles Bell, "the parts present distinct textures, and are laid in a natural and perfect order; it is necessary only to trace the tubes, or to observe the symmetrical order of the nervous cords, that we may discover their respective uses; the motions, whether of the solid or fluid parts, are so regular and uniform, that the whole offers a subject for observation and induction. Anatomy is already looked upon with prejudice by the thoughtless and ignorant: let not its professors unnecessarily incur the censures of the humane. Experiments have never been the means of discovery; and a survey of what has been attempted of late years in physiology will prove that the opening of living animals has done more to perpetuate error than to confirm the just views taken from the study of anatomy and natural motions."

It is small wonder that anatomy, both human and comparative, long flourished in Great Britain at the expense of experimental investigation. It has formed one of the great strengths of British surgery, supplemented a little later by pathologic anatomy; at the same time, it has stood in the way of the development of physiology and, by the same token, that of physiologic surgery. Fortunately the strength of the tradition has survived the overthrow of the once unconquerable prejudice it brought in its train.

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New Books

BOOKS RECEIVED

The following books have been received by the Editor; they will be reviewed critically as space and facilities permit. Omission of more extended review, however, is not to be taken as criticism of the merit of the book.

Operative Surgery. Edited by Charles Rob and Rodney Smith. London: Butterworth & Co., Ltd.; Philadelphia, F. A. Davis Co., 1956. Vols. 1 and 2 of 8 (plus index). Profusely illustrated.

Le Diagnostic du Cancer d'Estomac a la Periode Utile (Diagnosis of Carcinoma of the Stomach at the Time Most Favorable for Treatment). By Rene A. Gutmann. Paris: G. Doin et Cie, 1956. Pp. 257.

Pathology and Surgery of the Veins of the Lower Limbs. By Harold Dodd and Frank Cockett. Baltimore: The Williams & Wilkins Company, 1957. Pp. 462, illustrated.

Spinal Cord Compression. By I. M. Tarlov. Springfield, Ill.: Charles C Thomas, Publisher, 1957. Pp. 147, with 41 illustrations.

Functional Bracing of the Upper Extremities. By Miles H. Anderson. Springfield, Ill.: Charles C Thomas, Publisher, 1958. Pp. 463. Illustrated.

The Clinical Management of Varicose Veins. By David Woolfolk Barrow. New York: Paul B. Hoeber, 1957. Pp. 167, with 70 illustrations.

Homosexuality, Transvestism and Change of Sex. By Eugene de Savitsch. London: William Heinemann Medical Books Ltd., 1958. Pp. 120.

Temporal Lobe Epilepsy. Edited by Maitland Baldwin and Pearce Bailey; Co-Editors, Cosiamo Ajmone-Marson, Igor Klatzo and Donald Tower. Springfield, Ill.: Charles C Thomas, Publisher, 1958. Pp. 581. *Reviewed in this issue.*

The Management of Emergencies in Thoracic Surgery. By John Borrie. New York: Appleton-Century-Crofts, 1958. Pp. 340, with numerous illustrations. *Reviewed in this issue.*

The Physician's Own Library. By Mary Louise Marshall. Springfield, Ill.; Charles C Thomas, Publisher, 1957. Pp. 80.

Physical Examination of the Surgical Patient. By J. Englebert Dunthy and Thomas W. Botsford. Philadelphia: The W. B. Saunders Company, 1958. 2d ed. Pp. 375, with 203 illustrations. *Reviewed in this issue.*

On the Cerebrospinal Fluid in Normal Children and in Patients with Acute Abacterial Meningo-Encephalitis. By S. Widell. Lund, Sweden: Berlinyska Boktryckerict, 1958. Pp. 102, with 25 tables and 13 illustrations. *Reviewed in this issue.*

Obstetrics and Gynecologic Milestones: Essays in Eponymy. By Harold Speert. New York: The Macmillan Co., 1958. Pp. 700. *Reviewed in this issue.*

Lesions of the Lower Bowel. By Raymond J. Jackman. Springfield, Ill.: Charles C Thomas, Publisher, 1958. Pp. 347, with endoscopic illustrations in color. *Reviewed in this issue.*

Medulloblastoma. By Benjamin L. Crue Jr. Springfield, Ill.: Charles C Thomas, Publisher, 1958. Pp. 206, with 16 illustrations. *Reviewed in this issue.*

The Psychology of Medical Practice. By Marc H. Hollender. Philadelphia: The W. B. Saunders Company, 1958. Pp. 276. *Reviewed in this issue.*

On the Cerebrospinal Fluid in Normal Children and in Patients with Acute Abacterial Meningo-Encephalitis. By S. Widell. Lund, Sweden: Berlinyska Boktryckerict, 1958. Pp. 102, with 25 tables and 13 illustrations.

This investigation deals with the amount and composition of the cerebrospinal fluid protein in normal children of different ages. Studies were also made on cerebrospinal fluid from children and adults with acute abacterial meningoencephalitis in different stages of the disease, with particular attention to the connection between clinical symptoms and changes in the protein level of the cerebrospinal fluid. The cell count of the fluid was also studied systematically. The protein content was analyzed by electrophoresis, with determination of the X fraction, albumen, and $Alpha_1$, $Alpha_2$, $Beta_1$, $Beta_2$ and gamma fractions.

A total of 123 samples of cerebrospinal fluid from 98 normal children and 31 normal adults was studied. The cell count was observed to be high (0-15) during the first three months of life. The individual variation was considerable, especially during the first three weeks. The protein content was also higher (23 to 119 mg. per hundred milliliters) during the neonatal period. It then decreased successively to reach a minimum mean value 16.6 mg. per 100 ml. between the age of [illegible] months and 2 years. Thereafter it again increased gradually to a maximum mean value [illegible] mg. per hundred milliliters [illegible]

[illegible]

60 of the patients being children and 59 adults. Of the children, 33 had mumps meningoencephalitis and 27 other types. Only 15 adults had mumps meningoencephalitis, 44 had other types. A total of 256 samples of cerebrospinal fluid from these 119 patients were studied.

At onset of the disease the cell content of the cerebrospinal fluid was usually higher with mumps meningoencephalitis than with other forms. No relation between symptoms and changes in the cerebrospinal fluid was observed with mumps meningoencephalitis, but there was a clear correlation between the symptoms and these changes in other forms of meningoencephalitis. The changes consisted of a marked increase in cell count and protein content and a relative concentration of gamma globulin. It was concluded that the changes in the central nervous system associated with mumps meningoencephalitis are relatively benign and localized mainly to the meninges. Abnormalities in the protein content of the cerebrospinal fluid are considered due to disturbed meningeal permeability. No correlation was found between the results of electroencephalographic study and changes in the fluid.

Harold C. Voris, M.D.

Physical Examination of the Surgical Patient. By J. Englebert Dunphy and Thomas W. Botsford. Philadelphia: The W. B. Saunders Co., 1958, 2d ed. Pp. 375, with [illegible] illustrations.

The [illegible] *Physical* [illegible] *of the Surgical Patient* [illegible]

[illegible]

Nonprofit Corporations and Associations. By Howard L. Oleck. Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1956. Pp. 460.

This guide to the formation, operation and dissolution of tax-exempt organizations gives pertinent advice on how to get maximum tax benefits, how to draw up bylaws, how to conduct meetings, etc. All types of nonprofit organizations are discussed—the school, the college, the hospital, the fraternal organization, the scholarship foundation, and so on. The book is of particular value to hospital administrators and men interested in professional organizations.

O. C.

Lesions of the Lower Bowel. By Raymond J. Jackman. Springfield, Ill.: Charles C Thomas, Publisher, 1958. Pp. 347, with endoscopic illustrations in color.

The illustrations place this work in a class by itself. The color plates from proctoscopic photographs are the best I have seen, being sufficiently true to life to be useful as reference in proctoscopic examinations. Happily, they are numerous. The author's description of anorectal anatomy is well done, avoiding the overcomplicated and the diffiusely detailed. It is clear, simple, accurate and readily remembered. The monograph is based chiefly on the author's own experience in a large number of cases. Unlike much related writing, the work emphasizes diagnosis. Surgical therapy, however, is afforded adequate presentation.

Most anorectal operations are relatively simple, and a properly supervised resident can become reasonably proficient, if allowed a fair number of operations, in a year. This is not true of anorectal diagnosis; it is here that the surgeon without proctologic training errs. Years ago Dr. Collier F. Martin, long-time dean of Philadelphia proctologists, was firm in his opinion that two years' training in a proctologic service or clinic was imperative if he were to have consistently accurate diagnoses from postgraduate students on which he could depend at the operating table. Doctor Jackman's regard for the importance of diagnosis is well advised and praiseworthy.

Any physician interested in proctology would do well to have this book, and it should be available to all proctologic residents.

CLEMENT L. MARTIN, M.D.

The Psychology of Medical Practice. By Marc H. Hollender. Philadelphia: The W. B. Saunders Company, 1958. Pp. 276.

The author, who is professor and chairman of the Department of Psychiatry at the State University of New York and Director of the Syracuse (N.Y.) Psychiatric Hospital, maintains that, although the physical and psychic approaches to the patient are intertwined, they cannot be studied from the same point of view. The patient's emotional reaction to his illness and its treatment can determine the effectiveness of the therapy.

Dr. Hollender gives most of his attention to doctor-patient relations in medicine, surgery, obstetrics and pediatrics, as the broad fields in which the medical man works. The approaches he suggests in these general fields can be adapted, he suggests, to the various specialties.

Special chapters have been contributed by Dr. Leonard Stine, assistant professor of clinical medicine at the Chicago Medical School; Dr. Ernest M. Solomon, instructor in the Department of Obstetrics and Gynecology, Northwestern University Medical School (Chicago); and Dr. Julius B. Richmond, professor and chairman of the Department of Pediatrics, State University of New York

In the last two decades the psychiatrist, the psychoanalyst, the psychologist and the general practitioner have perforce assumed many of the functions once performed by the minister or priest. The doctor is everyone's "confessor." Psychiatric considerations, therefore, are a part of every medical man's daily practice. Dr. Hollender's suggestions as to the management of patients with medical problems, with carcinoma, impending operations, with loss of limbs, etc., as well as victims of postpartum psychoses, are down-to-earth and notable for their common sense. The book is recommended to all who undertake the healing art.

O. C.

An Introduction to the Study of Experimental Medicine. By Claude Bernard. Translated by Henry Copley Greene, with an introduction by Lawrence J. Henderson and a new foreword by I. Bernard Cohen. New York: Dover Publications, Inc., 1958. Pp. 226.

This new paper-bound edition is the only major work of Claude Bernard, the great French physiologist now available in English translation. First published in 1865, the text is still used in philosophy courses in France. It was first issued in English in 1927 and was reprinted in 1949. This new edition will find welcome readers everywhere as a medical classic which has not become passé.

M. T.

The Management of Emergencies in Thoracic Surgery. By John Borrie. New York: Appleton-Century-Crofts, 1958. Pp. 340, with numerous illustrations.

Although this book deals with a so-called specialty, it is written for those who see the patient first, be it a general practitioner or intern or a nurse. Mr. Borrie is to be complimented on an excellent format and a concise, pithy presentation of his subject. He has discussed all types of thoracic emergencies, from endobronchial foreign bodies to cardiac arrest, with aids to diagnosis and methods of treatment. Many roentgenograms have been reproduced to depict specific conditions.

This book can be recommended to surgeons, general practitioners, house physicians and nurses.

Philip Thorek, M.D.

Medulloblastoma. By Benjamin L. Crue Jr. Springfield, Ill.: Charles C Thomas, Publisher, 1958. Pp. [illegible], with 16 illustrations.

[illegible] documented: the bibliography contains 401 references.

In the author's opinion, about 200 cases of medulloblastoma occur each year in the United States. In at least three-fourths of these the patients are children under 15 years of age. The incidence in the male is twice that observed in the female. The symptoms of this tumor are mainly those of increased intracranial pressure plus, perhaps, the syndrome of the cerebellar vermis, with ataxia most marked on standing. The usual therapeutic approach is surgical exploration; verification of the lesion by biopsy; decompression, and irradiation of the tumor site and the entire neural axis. Although the average survival period is less than a year, a few cases of surprisingly long survival have been reported. The patients have generally been elderly, which raises the possibility of misdiagnosis, a slower growing type of medulloblastoma or of "maturation" of the tumor. The last-mentioned might conceivably be induced by irradiation.

This monograph presents a thorough review of the available literature on an important group of intracranial tumors and will be of interest to neurosurgeons, neurologists, pediatricians and pathologists.

Harold C. Voris, M.D.

Obstetrics and Gynecologic Milestones: Essays in Eponymy. By Harold Speert. New York: The Macmillan Co., 1958. Pp. 700.

This is one of the most delightful books I have ever read, both because of the subject matter and because of the manner in which the author has compiled and presented his data. Regrettably, medical history interests far too few physicians.

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ments, and (9) Operations and Therapeutic Procedures. In these nine sections the author tells the stories behind 79 eponyms. In many instances more than one man's name is associated with a disease, syndrome or instrument. In addition to the true history of the eponyms there is a brief account of each man's life from both the professional and the personal point of view.

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sent; the close collaboration between artist and author, however, leaves little to be desired in the understanding of Reichert's and Meckel's cartilages. The section pertaining to the diaphragm, particularly the all-important subject of hiatal hernia, is presented in some detail and is illustrated beautifully. Figure 277 shows the types of diaphragmatic hernia in an unusual and appealing way. This book can be recommended unreservedly to any one interested in surgical anatomy.

PHILIP THOREK, M.D.

Applied Medical Library Practice. By Thomas E. Keys. Springfield, Ill.: Charles C Thomas, Publisher, 1958. Pp. 495. Illustrated.

The librarian of the Mayo Clinic has compiled a very thorough guide for the *users* of the medical library. He gives very cogent advice on the administration of the medical library, explains the accepted systems of cataloging and classification, the use of medical indexes, etc. There is also much historical material on the development of medical libraries and medical publishing in the United States. References are profuse, and the Appendix contains a list of publishers of medical and related books in the United States, arranged alphabetically by city; a list of the medical bookdealers in the United States who handle new books (arranged in the same way); a list of antiquarian booksellers; a list of top circulation medical journals; and a bibliography of medical works that have been reproduced in facsimile. The index is thorough.

This informative volume should be on every medical library shelf and in the personal library of all who have occasion to use sources of medical knowledge.

M. T.

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. . . Even when he was as much overlord of the continental medical professors as Frederick Barbarossa was over the Germanic princes in the Middle Ages. Rudolf Virchow's influence was always tempered by the rising science of bacteriology under Louis Pasteur and Robert Koch. who taught that microbes are the cause of disease, and that identifying and killing them is the main object of medicine. It would not be true to say that Rudolf Virchow overlooked microbes; but certainly he never wavered from his belief that the cell and the tissue of cells embodied the fundamental of disease. W. H. Welch stated that Virchow's conception of cellular pathology was the greatest advance which scientific medicine had made since its beginning.

—*Williams*

Abstracts from Current Literature

Vaginal and Abdominal Total Hysterectomy. Backer, O. G., and Kriestoffersen, K., Acta Chir. Scandinav. 114:67, 1958.

The early results of 99 vaginal and 110 abdominal hysterectomies are reported. The two approaches showed the same complication rate, 12 per cent following vaginal hysterectomy and 9 per cent following abdominal hysterectomy. The postoperative temperature curve and the duration of the stay in the hospital were identical. The total operative mortality rate was 1 per cent.

The late results were studied by a follow-up of 90 patients of the vaginal and 84 of the abdominal series. This revealed prolapse in 43 per cent of the vaginal cases. In the abdominal series 8 per cent had prolapse.

It is concluded from this study that vaginal hysterectomy offers no primary advantages over the abdominal procedure.

EDMUND LISSACK, M.D.

Tumors of the Parotid Gland. Bruzelius, S., Cederquist, E., Linell, F., and Bergman, F., Acta Chir. Scandaniv. 114:1, 1958.

The histologic classification of parotid tumors is still unsettled, nor is there universal agreement as to the best form of treatment. Radiotherapy has not been widely accepted, although some favorable results have been reported.

In recent years there has been an increasing tendency to operate on mixed tumors more radically than before, owing to their tendency to recur. There has been disagreement [illegible] concerning the value of irradiation in preventing the recurrence [illegible].

[illegible]

to four weeks the tumor was enucleated or excised. Then 10 mg. radium tubes with filters corresponding to 2 mm. of lead were immediately deposited in the wound cavity, where they were usually left for ten to twelve hours. In 81 patients primarily treated in this fashion and followed for five to eighteen years, no recurrences have been observed. In a second group, 14 patients operated upon at other hospitals with subsequent irradiation at the authors' hospital several days after the operation, there were recurrences in 2 of 6 patients who were treated only with intracavital radium and in 3 of 8 who were given only telegamma therapy. In a third group of 5 patients treated in the authors' hospital by operation only there were no recurrences, but this group was, of course, too small to be significant. In a fourth group numbering 54, treated by operation alone (enucleation or extirpation) at other hospitals, there were 14 recurrences.

In all, 17 recurrences of tumors primarily operated elsewhere were treated by combined operation and irradiation in the authors' hospital in Lund. Of these, the tumor recurred in only 2. These 2 were later operated upon a third time, with subsequent irradiation, and have not recurred in 8 and 11 years respectively. Postoperative complications consisted of facial paresis, delayed healing and fistulas of the salivary gland.

Persistent facial paresis occurred in 9 of the 112 patients who were given combined therapy. Three of these occurred in the recurrent group of 17 cases. The paresis [illegible] Delayed healing [illegible] 7 of [illegible] tumors, a combination of surgical treatment and irradiation is superior to surgical treatment alone.

The malignant parotid tumors (49) were treated along similar lines, except that the doses of irradiation were larger. The intracavital application of radium tubes was supplemented with postoperative telegamma treatment, usually through several fields, including also the regional lymph nodes. The overall frequency of recurrence in the various groups of malignant parotid tumors was high. Of the 49 patients, 1 or more recurrences developed in 21. There were 18 deaths from malignant disease, 14 of them within five years. Because of these discouraging results, the authors conclude that more *radical surgical treatment in combination* with radiotherapy must be recommended for malignant growths.

In the authors' clinic, most tumors are not operated upon until preoperative telegamma treatment has been given. Exceptions to this rule are superficial tumors freely movable beneath the skin. During operation the specimen is sent to the pathologist for immediate frozen section study. If the diagnosis is benign mixed tumor, radium tubes are placed in the wound cavity and no further measures are necessary. If it is malignant tumor, the operation is extended to include total parotidectomy, and, as a rule, radical neck dissection is added. Generally, the authors ocnsider postoperative irradiation indicated. If the histologic diagnosis cannot be made during the operation, radium tubes are inserted in the wound cavity. If the tumor is malignant the same plan is followed, usually with external radiotherapy added later.

THOMAS WILENSKY, M.D.

Meckel's Diverticulum in Childhood. McParland, F. A., and Kiesewetter, W. B., Surg. Gynec. & Obst. 106:11, 1958.

In this article the authors review the embryologic and pathologic anatomic aspects of Meckel's diverticulum. They describe the formation of the omphalomesenteric duct and explain how arrest of the obliterative process at different stages accounts for the variety of anatomic conditions observed. The common variants are named and described. These are fibrous cord, umbilical sinus, mucous cysts and the classic ileal diverticulum. The common complications of Meckel's diverticulum are hemorrhage, intestinal obstruction and perforation or inflammation of the diverticulum. Meckel's diverticulum is the most frequent congenital anomaly of the gastrointestinal tract. It is most often symptomatic in patients under 1 year of age. The chief complaints are rectal bleeding, abdominal pain, vomiting and a draining sinus. The treatment for this condition is surgical, and the authors express their opinion that all diverticula found at operation should be removed. All deaths in this series were due to severe complications in symptomatic cases. In conclusion, the authors *stress the point that Meckel's diverticulum* should be considered if rectal bleeding occurs in a patient under 2 years of age.

JAMES H. ERWIN, M.D.

Experiences with the Retrosternal Esophageal Replacement Employing Jejunum or Ileum. Jezioro, Z., and Kuz, H., Surgery 44:275, 1958.

An extensive experience in the construction of a retrosternal esophagus in 28 patients operated upon in Wroclaw, Poland, is herein submitted. All had suffered chemical burns of the esophagus at various times, and all had been previously treated by dilations and gastrostomy for months to years. In 23 patients the retrosternal esophagus was constructed from jejunum and from ileum, with a cecal cap including the ileocecal valve in the remaining 5. There was only 1 death, that of a man aged 50 who died from pneumonia four months after discharge.

In the author's opinion there are many advantages in constructing a totally new esophagus from small intestine and placing it retrosternally by means of a two-stage operation. They state that the procedure is simple and well tolerated. The placement of the intestine into the anterior mediastinum created no side effects referable to the thoracic viscera. Functionally and cosmetically the operation is far better than the antethoracic procedures and is better also than other transthoracic methods. The major problem revolves around the mobilization of a sufficiently long jejunal loop with its blood supply intact. Since 1951 they have been able to mobilize sufficient jejunum in almost all cases, owing to experience from an extensive anatomic study of the arterial and venous supplies to the portion of bowel selected for transplantation.

A carefully studied technic has been developed for the division of minimal numbers of blood vessels close to the roots of the superior mesenteric vessels, together with complete division of the intervening peritoneum in the intervascular spaces and the occasionally necessary displacement of the superior mesenteric vessels in a cephalad direction, with or without division of the ileocolic vessel.

At the first stage, mobilization of the jejunum or ileum was carried out and intra-abdominal anastomosis between stomach and bowel made after the small bowel had been pulled through the mesocolon. The retrosternal tunnel was then dissected and the mobilized intestine placed through it to the cervical region. The esophago-intestinal anastomosis in the cervical region was made at the second operation.

The technical details of dissection of the retrosternal tunnel are described, together with the complications that may ensue. Pneumothorax on one or both sides may occur during the dissection, and, although this complication is not particularly hazardous when [illegible] employed, [illegible] after [illegible]

[illegible] M.D.

Beck's Operation for the Treatment of Angina Pectoris [illegible]

poxemia. Patients with advanced anemia, valvular disease or cyanosis, for example, do not have cardiac sensations despite low arterial oxygenation (60 per cent or less).

Clinical experience during cardiac surgical procedures, according to the experimental observations of C. S. Beck and his group, has shown that disturbances of heart action as well as the majority of infarctions are caused by electric phenomena. The latter are due to irregular blood distribution in the myocardium. Consequently, the therapeutic aim is to establish a continuously equal distribution of blood to all the parts of the heart muscle. This can be achieved by early dilation of the coronary collaterals to a diameter of up to 200 microns. Thus, full and lasting compensation is provided in advance for an anticipated or imminent obstruction of one of the coronary arteries, or for an already infarcted segment of the myocardium.

The four steps leading to an optimal dilation of the collateral vessels are: (1) Roughening of the pericardium and epicardium; (2) application of crude asbestos powder on the heart, in order to produce adhesions; (3) partial ligation of the sinus coronarius, and (4) attachment of mediastinal fat tissue to the heart with sutures.

These four steps constitute the principle of Beck's operation, which is superior to all the other surgical methods and, at the same time, a comparatively simple procedure.

A surgical approach is contraindicated, however, in cases of cardiac enlargement or insufficiency. Furthermore, patients who have had a coronary infarction [illegible]

[illegible]

[illegible]

against myocardial infarction and for the relief of angina pectoris.

ERNEST G. ABRAHAM, M.D.

A Study of 268 Patients with Carcinoma of the Midrectum Treated by Abdominoperineal Resection with Sphincter Preservation. Waugh, J. M., and Turner, J. C. Jr., Surg., Gynec. & Obst. 107:777, 1958.

The authors present follow-up data on 268 patients with carcinoma of the midportion (5 to 10 cm. above the dentate line) and upper portion of the rectum who underwent combined abdominoperineal resection with preservation of the anal sphincter. They concluded that if this procedure included ample resection of the sigmoid mesentery, the perirectal tissue and the internal anal sphincter in lesions located within 1 inch (2.5 cm.) of the levator, it would be a sound operation for carcinoma, the results of which would compare favorably with those following the Miles operation.

JOHN A. ZIEMAN, M.D.

A Histochemical Evaluation of Carcinoma in Situ of the Cervix Uteri. Nesbitt, R. E. L., Jr., and Stein, A. A., Surg., Gynec. & Obst. 107:161, 1958.

The cervical tissues obtained from biopsy and hysterectomy specimens were stained with hematoxylin and eosin and by periodic-acid-Schiff technics. The latter stain was useful in identifying the basement membrane and therefore in detecting objective invasion, as well as in estimating the degree of differentiation and maturation of the cervical epithelium. It appeared that carcinoma *in situ* of the ectocervix is a distinct entity, characterized by atypical basal cell hyperplasia with failure of cell maturation. When this lesion appears in the endocervix it results from reserve cell hyperplasia, with absolute failure in differentiation as well as in maturation.

Until more is known of the fine correlation of structure and function, considerable effort should be exerted to establish precise and uniform histologic criteria for the diagnosis of carcinoma *in situ*.

The cervical tissues from 42 acceptable cases of carcinoma *in situ* were subjected to careful histologic and cytochemical study in this series. The purpose of the study was to seek specific histologic criteria for diagnosis, to search for a reliable method of identification of the basement membrane and to attempt evaluation of the biologic characteristics of the lesion.

EDMUND LISSACK, M.D.

Anterior Approach to the Upper Ureter. Tauber, A. S., and Maluf, N. S. R., J. Urol. 80:13-16, 1958.

The authors describe the anterior approach to the upper portion of the ureter.

The advantages of this incision over the classic lumbar incision are: (1) the ureter is exposed quickly; (2) heavy muscles, blood vessels and nerves are avoided; (3) postoperative pain and ileus are minimal, and (4) the patient does not have to be "jack-knifed" into position.

This approach is not recommended for full exploration of the kidney.

SHEPARD JEROME, M.D.

Cervical Tampon-Synchronous Test for Ovulation. Doyle, J. B., J.A.M.A. 167:1464, 1958.

There is a period in each month when the mature graafian follicle will expel its liquor folliculi. Unless promptly aspirated by the tubes the egg floats down the side of the pelvis, where, if tubal motility and patency are unimpaired, one of the tubes will siphon it up and propel it toward the uterus.

The cervical value determined by the tampon Tes-Tape test for dextrose in the cervical mucus becomes maximal synchronously with positive results of tests from cul-de-sac transudate of liquor folliculi. Simultaneous positive results are observed after contact for one minute with fluid directly aspirated from the follicle. The test appears to be a good direct test for studying tubal siphonage of liquor folliculi.

This simple test, which can be done at home, has been devised for a sharp rise in the dextrose concentration present in the cervical secretion simultaneously with the occurrence of ovulation.

EDMUND LISSACK, M.D.

IMPORTANT ANNOUNCEMENT

Contributors of scientific articles for publication in The Journal of the International College of Surgeons from Europe, the Near East and the Middle East should send their articles to:

European Office of the
International College of Surgeons
6-8 Rue de la Confederation
Geneva, Switzerland

A special committee has been appointed to evaluate the papers submitted for publication. The Journal publishes summaries in English, French, German, Spanish, Italian and Portuguese. Summaries of articles should be included in as many of these languages as possible.

AVIS IMPORTANT

Les auteurs d'articles scientifiques destinés à être publiés dans le Journal du Collège international de chirurgiens sont priés d'adresser leurs articles à l'adresse suivante pour l'Europe, le Proche et le Moyen Orient.

Bureau Européen du
Collège international de chirurgiens
6-8 rue de la Confédération
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Schedule of Meetings

INTERNATIONAL COLLEGE OF SURGEONS

1959

April 12-15 Shiraz, Iran	Iranian Section International College of Surgeons
May 6 Indianapolis, Indiana	Indiana State Division U. S. Section, International College of Surgeons
May 21 Bangkok, Thailand	Thailand Section International College of Surgeons
May 21-22 Huntsville, Alabama	Alabama Surgical Section U. S. Section, International College of Surgeons
May 28-30 Kiamesha Lake New York	New York State Annual Meeting U. S. Section, International College of Surgeons
June 1-3 Hamburg, Germany	German Section and German-Speaking Sections, European Federation International College of Surgeons
June 19-21 Lyons, France	French Section International College of Surgeons
July 25-26 Amsterdam, Netherlands	The Netherlands Section International College of Surgeons
August 8-9 Helsinki, Finland	Finland Section International College of Surgeons
August 19-20 Vienna, Austria	Austrian Section International College of Surgeons
September Santos, Brazil	Brazilian Section International College of Surgeons
September 28-29 Chattanooga Tennessee	Tennessee Valley Medical Assembly U. S. Section, International College of Surgeons
October 30 Hong Kong, China	China—Hong Kong Section International College of Surgeons
November 2 Bangkok, Thailand	Thailand Section International College of Surgeons
December Taipei, Taiwan (Formosa)	China—Formosa Section International College of Surgeons
December Jaipur (Rajasthan) India	India Section International College of Surgeons

Schedule of Meetings

INTERNATIONAL COLLEGE OF SURGEONS

1959

MIDSUMMER POSTGRADUATE EUROPEAN TOUR

July 17 - August 27, 1959

Dr. Ross T. McIntire, Coordinator

TWENTY-FOURTH ANNUAL CONGRESS

North American Federation

(Canada, Mexico, U. S. and Central American Sections)

International College of Surgeons

SEPTEMBER 13-17 CHICAGO, ILLINOIS

AROUND-THE-WORLD POSTGRADUATE CLINIC TOUR

October 10 - November 28

Dr. Edward L. Compere, Coordinator

1960

TWELFTH BIENNIAL INTERNATIONAL CONGRESS

International College of Surgeons

MAY 15-18 ROME, ITALY

Schedule of Meetings

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Congress of German-Speaking Sections of European Federation

INTERNATIONAL COLLEGE OF SURGEONS

Hamburg, Germany June 1-3, 1959

Prof. Dr. A. W. Fischer, F.I.C.S. (Hon.)
President, German Section

Formal invitations have now been issued to the members of the four German-speaking Sections of the European Federation of the International College of Surgeons to attend the Congress to be held in Hamburg, Germany, June 1-3. The four Sections are those of Germany, the Netherlands, Austria and Switzerland. An open invitation is also extended to all members of the College who wish to avail themselves of the opportunity to participate in a well-organized scientific program that is particularly oriented toward the clinical and practical aspects of the subjects under consideration.

The invitation is issued over the signatures of **Prof. Dr. A. W. Fischer**, F.I.C.S. (Hon.), professor of surgery of the University of Kiel and president of the German Section of the College, and of **Prof. Dr. K. Boshamer**, chief of surgery at the Town Hospital of Wuppertal-Barmen and secretary of the Section.

The opening assembly will take place on Monday morning, June 1. There will be a reception and addresses of welcome. **Dr. Steltzner** of Hamburg will give an evaluation of the historic importance of Hamburg in the development of surgery.

Dr. Horatz of Hamburg will present a paper on anesthesia, and **Dr. Lindenschmidt** of Hamburg one on postoperative metabolic and ingestive disturbances. Both papers will be followed by open discussion.

Prof. Dr. Leopold Schönbauer, F.I.C.S.
President, Austrian Section

On Tuesday, June 2, there will be simultaneous sessions devoted to the surgical specialties. Operative procedures will be demonstrated; patients will be introduced, and their cases will be fully discussed. Congressists will have the choice of attending the following:

only the International College of Surgeons Tours, because of painstaking preparation, can enable you to.

Fortunate beyond all expectation will be the surgeons and their families who will join **Dr. Ross T. McIntire**, our distinguished executive director of the International College of Surgeons, on an extraordinary journey which will prove to be informative, stimulating and most enjoyable.

Mutatis Mutandi

Times change, and with them our points of view. Change is the law, not only of the function of our minds, but of our physical structure, which constantly undergoes change.

So is it also in the large world of political realities. Now our state department sanctions and encourages exchange of surgical missions and health meetings in general, between us and Russian doctors, in the hope that nonpolitical contacts between specialists can to some degree help to effect an easing of tensions between the two countries. This is *comme il faut.*

Certainly such an exchange can only bear clear witness, for all the world to see, that it is our earnest desire to withhold no iota of information, no inkling of any progress, in surgical science and technic, from surgeons anywhere in the world. Equally, we are ready to accept gratefully any information of value which may be imparted to us, so that we may serve humanity more ably. To make a secret of scientific knowledge or to fail to make use of any that may be available, in view of the basic principles of the International College of Surgeons, is to us both inhuman and unthinkable.

Therefore, reflecting the high hope of the government of the United States, the Midsummer European Postgraduate Tour of the International College of Surgeons is including Russia, with stopovers at Leningrad and Moscow, confident that only good can come of contacts which avoid divisive political ideologies and concentrate on abiding devotion to science and concern for the health of mankind.

Max Thorek

LA PRESSE MEDICALE

Le grand journal français de chirurgie et de médecine paraît chaque semaine, et donne toutes les informations scientifiques et professionelles

ABONNEMENT

$17.00 par an.

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120 Boulevard St.-Germain Paris VI, France

Doorways to Europe

MIDSUMMER EUROPEAN POSTGRADUATE CLINIC TOUR

July 17 - August 27

Were Shakespeare to come with us on our Midsummer European Postgraduate Clinic Tour, he might write a sonnet sequence on its progression. For in every sense this trip offers everything. And while it is not the only tour planned for this year (don't forget the Around-the-World Tour offered in October and November), in many ways this is extremely enticing. Truly a "tide to be taken at the flood."

Here are nine reasons why:

Holland, Denmark, Norway, Sweden and Finland are countries not often visited on International College of Surgeons tours. Consequently the scientific meetings in Amsterdam and Helsinki will be of lasting interest. These amazing lands of dikes, fjords and northern lights offer much in themselves as well. **Russia**, included in an International College of Surgeons tour itinerary for the first time, provides an opportunity to probe the unknown and explore the mysteries of that curtained country.

Austria, Germany and France are old friends to International College of Surgeons travelers and there is certainly nothing more rewarding than spending time among old friends. The highlight of this continental portion of the tour is the meeting with the Fellows of the Austrian Section in Vienna.

And there you are! Nine great countries offering nine good reasons for taking part in this July and August 1959 Midsummer *Doorways to Europe* tour.

Because of limitations in traveling space and hotel accommodations, you are sincerely urged to make it easy for yourself and to make your reservations now.

Frederiksborg Castle in Denmark

Dr. George Chapchal, F.I.C.S.
President
The Netherlands Section

Dr. A. Nicolet, F.I.C.S.
President
Switzerland Section

Section on Thoracic and Abdominal Surgery
Hamburg-Eppendorf Surgical Clinic — **Dr. Zukschwerdt**
Various televised operations, with brief commentary

Section on Trauma
Hamburg Port Hospital—**Dr. Küntscher**
Nailing; Management of pseudarthrosis

Section on Urology
Hamburg Elizabeth Hospital— **Dr. Bischoff**
Megalo-ureter operation (or hydronephrotic plastics)
Demonstrations and film presentations

Section on Gynecology
Hamburg-Eppendorf University Women's Clinic—**Dr. Schubert**
Operations and demonstrations

On Wednesday, June 3, the program will include the following:

Section on Surgery and Orthopedics
Kiel University Surgical Clinic — **Dr. Fischer, Dr. Wanke, Dr. Rohlederer**
Demonstrations

Symposium on Angiology
Itzehoe State Hospital—**Dr. Loose**

Section on Plastic Surgery
Hamburg-Northwest-German Maxilofacial Clinic—**Dr. Schuchardt**
Operations and Demonstrations

Section on Urology
Hamburg-Barmeck Surgical Clinic— **Dr. Junker**
Operations (possibly cystectomy) and demonstrations

Section on Gynecology
Hamburg-Altona Women's Clinic— **Dr. Schultz**
Vaginal operations; antibiotic prophylaxis

Program of Social Activities Carefully Organized

An extremely inviting program of social and recreational activities has been arranged for the congressists and their families.

On Monday, the ladies are most cordially invited to attend the formal opening session.

In the afternoon and evening there will be a festive boat excursion with afternoon coffee and later a supper which will feature seafood and local dairy products. The occasion will be informal and designed to foster friendly sociability.

On Tuesday afternoon the Senate of the Free and Hanseatic City of Hamburg will hold a reception for the congressists and their families at the City Hall.

Additional parties have been planned for the ladies, including museum tours and sightseeing excursions.

Transportation by bus will be provided both for the congressists to and from the clinics and for the ladies on their tours.

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Postgraduate Courses and Conferences

AUSTRIA

VIENNA

The American Medical Society of Vienna
and
The University of Vienna

Postgradute Courses in Surgical Science Provide Opportunities for Postgraduate Work in Various Fields of Surgery

For information write: Dr. M. Arthur Kline, F.I.C.S., Secretary, American Medical Society of Vienna, 11 Universitätsstrasse, Vienna, Austria.

FRANCE

Special Course in Urologic Surgery
May 14-16, 1959
Prof. Dr. Raymond Darget, F.I.C.S.
of the University of Bordeaux
at the
Cancer Prevention Center and the
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Subjects

Treatment of tumors of the bladder, including radium therapy and palliative measures such as denervation of the bladder and uretero-intestinal anastomosis.

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on
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Symptomatic and Surgical Aspects

April 20-25, 1959

This seminar, lasting six full days, from 8:30 a.m. to 7:00 p.m. will include practice in endoscopy and urography.

Those registered for the seminar will be limited in number and may continue their work at the Institute for three months.

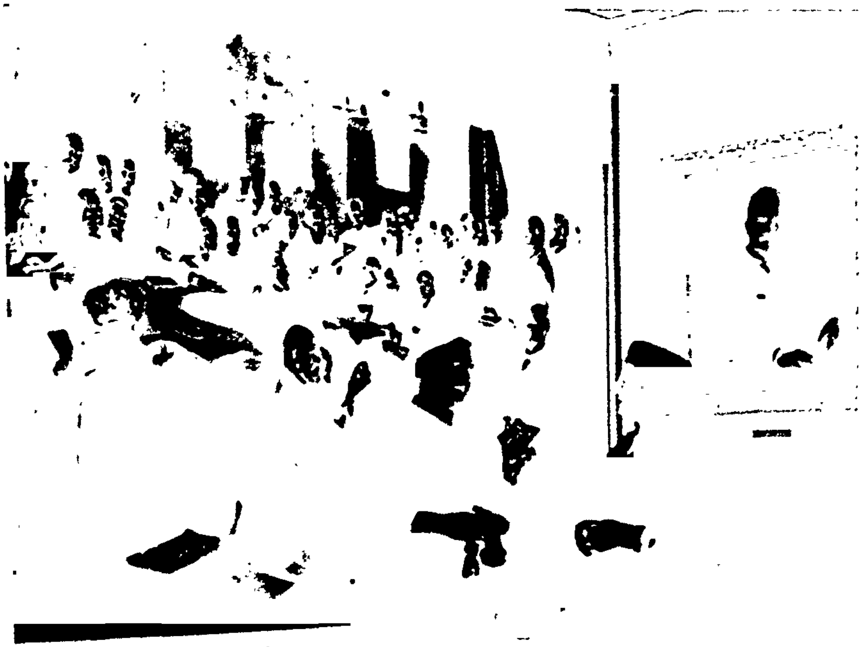
For further information address: Secretaría del Instituto de Urología, Pabellón de la Asunción, Hospital de la Sta Cruz y San Pablo, Barcelona 9, España.

International Surgeons' Hall of Fame

VISITORS FROM FAR AND NEAR

GUESTS WITH SPECIAL INTER EST IN GREEK EXHIBIT

Dr. Harry Fournier of Chicago wa happy to guide these guests throug the Hall of Fame. The Greek Roor appealed to them particularly. The are, with Dr. Fournier, Mrs. Georg Samaras, wife of a member of th Greek Parliament who now is a spe cial representative at the United Na tions; Mrs. K. Rombakis, a socia service worker; Mr. K. Rombaki formerly a professor of physics i Greece and now an electronics er gineer in Chicago, and Mr. John Ror bakis. Chicago architect.



OPERA STAR APPRECIATES DRAMA OF SURGICAL HISTORY

Among the most enthusiastic of recent visitors to the International Surgeons' Hall of Fame were (at left) the famous operatic soprano Mme. Rosa Raisa Rimini and her friend, Mrs. Theodore Cornbleet, wife of Dr. Theodore Cornbleet of Chicago.

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Carrillo received his M.D. degree in 1929, the highest ranking student in his class, and the following year he was granted a fellowship by the University of Buenos Aires to study in Europe.

He spent two years in Amsterdam, Holland, at that time the foremost center for the study of neurology. He worked with Prof. C. U. Ariens Kappers, Prof. R. Brouwer and Prof. Oljenik.

Carrillo evidenced marked capacity for research. In the field of cerebral sclerosis he isolated the form which was named both by Prof. Brouwer and by Prof. Altieri of Italy *forma esclereatrofiante de Carrillo.* In his work on polineuritis (induced) he demonstrated that it was provoked by phosphate of creosote, an ingredient of a popular drink known as Jamaica ginger, which gave its name to the condition—*ginger paralysis.*

His investigations into histo-chemical mechanics of impregnation and other technics of coloring neuroglia were completed during the years 1931-1932, partly in the neuropathological laboratory of the University under the supervision of Profs. Heringa and Brouwer. (He continued his investigations in this field later, during a ten-month stay in Paris, where he worked with Ivan Bertrand at Salpêtrière.)

Carrillo also conducted some very fruitful investigations into the phylogenic development of neuroglia which were known to and appreciated by Ariens Kappers.

From Holland Dr. Carrillo went to Berlin, where he studied with Prof. Schulter, director of the neurological clinic of the Auffeland Hospital, and later visited other services, among them that of Prof. Vegt at the Hirnforschung Institute.

Then followed his stay in Paris, with courses at the neurological clinic of Prof. Georges Guillain and at the laboratory of Bertrand at Salpêtrière.

At the end of the year 1933 Carrillo returned to Buenos Aires. Drs. José Arce and Manuel Balado entrusted to him the organization of the neuropathological laboratory of the Institute of Clinical Surgery, to which task Carrillo, after mornings devoted to neurosurgery, gave all his afternoons.

During the following years he published works concerning numerous phases of his specialty. When he applied for the post of adjunct professor of neurosurgery he submitted a total of a hundred and eleven works dealing with neurosurgery, neuropathology, comparative anatomy, neurophysiology, clinical neurology and psychiatric and clinical medicine.

Finally, based on yodoventriculography, the method devised by his teacher Balado, he published his first work dealing with radiology of the fourth ventricle, initiating a series of publications upon that original procedure which had its culmination in his masterwork upon the theme, *Yodoventriculagrafia, Fosa Posterior,* a book which received honorable mention in the national science awards of 1938.

By 1939 Carrillo was in charge of the service of neurology and neurosurgery at the Central Military Hospital. In that year I was appointed honorary intern of that hospital, and I was privileged to know him. The modesty of his personality attracted me, his talents and his ability, and, over and above all, the great generosity with which he invited me to follow in that specialty which I likewise embraced with fervor and enthusiasm.

In 1942, Dr. Balado died, and Carrillo was chosen to succeed him.

While Carrillo held the chair of neuro-

Ramón Carrillo

M.D., F.I.C.S. (Hon.)

1907-1956

RAUL F. MATERA, M.D., F.I.C.S.

BUENOS AIRES, ARGENTINA

Dr. Ramón Carrillo

On December 20, 1956, Dr. Ramón Carrillo, former titular professor of neurosurgery on the Faculty of Medical Science at Buenos Aires, former national minister of public health in Argentina and honorary member of the International College of Surgeons, died at Belém, Brazil.

To sketch objectively and realistically the saga of this extraordinary man, whose medical career was compounded of numerous and diverse talents, grounded on superlative technical ability and crowned throughout with honor, is most difficult.

An innately gifted youth, Carrillo made rapid strides in his education.

He pursued his secondary studies at the National College of Santiago del Estero, receiving his bachelor's degree in 1923, at the age of sixteen, the youngest in his class.

The following year he enrolled in the Faculty of Medical Sciences at Buenos Aires, and three years later won, through competitive examination, an internship in the National Clinical Hospital. Simultaneously he attended the Institute of Clinical Surgery at the invitation of Prof. José Arce, his first master in surgery.

At about this time, Dr. Manuel Balado

This article concerning Dr. Ramón Carrillo is a greatly abridged translation of a brilliant and comprehensive monograph written by Dr. Raul F. Matera, secretary of the Argentina Section of the International College of Surgeons.

Dr. Matera is head of the department of neurology and neurosurgery of the Central Military Hospital in Buenos Aires. For many years he was closely associated with Dr. Carrillo. It is a great tribute to the memory of an honored leader that his disciple, an eminent and busy surgeon scientist, should devote time and endless endeavor to so exhaustive a biography, with its painstaking research into every phase of the subject's manifold achievements.

We regret that lack of space has limited us to a condensation of Dr. Matera's thoughtful and sensitive evaluation of the life and works of a celebrated scientist, surgeon, teacher and administrator.

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From the Executive Director's Notebook

ANTICIPATING IMPORTANT EVENTS

Dr. Ross T. McIntire

The past few weeks have been given to program planning for the meetings that will be held during 1959. The Florida meeting laid a good pattern for all regions and states to follow.

It was my privilege to meet with the officers and the credentials committee of the New York State Section on January 31, when the plans for their state meeting, which will be held May 28-31, were discussed in full. **Dr. Henry P. Leis, Jr.**, the program chairman, has arranged an outstanding scientific program. The general chairman, **Dr. Milton Weinberg**, assures us that the arrangements at the Concord Hotel will be such that this also will be a very entertaining meeting. The women of the New York State Section auxiliary will provide entertainment for the families of the attending surgeons.

On the morning of January 31, I had the opportunity of visiting with **Dr. Alexander Brunschwig**, a vice president of the College, who is one of the outstanding surgeons in our country. I saw many of his cases at Memorial, and discussed with him methods of rehabilitation. The International College of Surgeons has a tremendous opportunity to further the cause of rehabilitation in all its phases, working through its many national chapters in the various countries of the world. Dr. Brunschwig, through his travels, has much first-hand information regarding the work done in other countries in this regard.

It was my privilege to appear before the Subcommittee on Health of the Committee on Labor and Public Welfare, on February 26, in support of the Senate Resolution SJ 41. The purpose of this bill is to further research in the field of prevention of disease and in the advancement of rehabilitation. The important phase of this bill is that it provides a method for an exchange of information in these fields, internationally. The International College of Surgeons, *because of its world-wide membership, can* be of great value in the implementation of such a program. I was highly honored to appear in support of this bill and to present supporting data gained by my work in rehabilitation in the Navy, the President's Committee and the College.

To further the international programs that are being presented this summer, a tour has been arranged for surgeons and their families to visit the countries of northern Europe. The itinerary is being announced, and the dates given, in this issue.

Outstanding in this tour will be the clinical meetings that will be held in Holland and Finland. The Amsterdam meeting, which will be held on July 25 and 26, promises to be most interesting. Again, we will emphasize international rehabilitation. Much has been done in Holland and Denmark in this field, and we shall be able to see this fine work, observe the methods used and note the results.

Our visit in Norway should be exceedingly interesting, for we have several friends there. There will be an opportunity, as well, to see much in Sweden.

In Finland, we have a very strong national chapter, *composed of the outstanding* surgeons of that country. Clinical se-surgery he surrounded himself with men of exceptional ability. Together with them he inaugurated the period that Carrillo called the period of the systematizers.

In 1944 Carrillo was put in charge of the secretariat of public health of the nation, assuming the responsibility of that arduous task while retaining the chair of neurosurgery. He relinquished some of the tasks connected with the latter to Tomás Insausti and the author, who were accustomed to carry out his directives.

In 1945 the department of neurosurgery was transferred to the pavilion of Costa Boero and was reorganized as the Institute of Neurosurgery. It was the greatest organization of neurosurgeons and neurological specialists in all South America. Its work was under constant scrutiny, with frequent publication of statistical reports on its achievements. It received postgraduate students from all parts of South America.

The review, *Archives of Neurology*, which had been published by Dr. Manuel Balado, now came out newly rejuvenated under the title, *Archives of Neurosurgery*, and became highly influential.

In the year 1945, through the initiative of Drs. Alejandro Schroeder of Uruguay, Eliseo Paglioli of Brazil, Alfonso Asenjo of Chile, Ramón Carrillo and Rafael Babini of Argentina, Latin-American biennial congresses of neurosurgery were initiated. Dr. Ramón Carrillo was a member of the permanent committee of these congresses and the secretary general of the Third South-American Congress, held in Buenos Aires in 1949.

The Institute was also represented in numerous national and international congresses held in Argentina and abroad.

In the year 1953 Dr. Carrillo presented at the Fifth Latin-American Congress of Neurosurgery an important work, *Clinical-Anatomic Study of the Tumors of the Posterior Fossa,* in collaboration with Drs. Matera, Insausti, Prado, Casté and Elizabeth Franke.

Even while he was so productively engaged he began to suffer (in 1951) from the effects of a serious and progressive illness which finally led to his death. Malignant arterial hypertension with encephalopathic manifestations (headaches both obstinate and intense) obliged him to rest and interfered with his work. He resigned both the ministry and his position at the Institute to travel to the United States to seek peace and recuperation.

In recognition of his outstanding abilities and accomplishments Dr. Carrillo had been the recipient of numerous titles, honors, and decorations from universities, learned societies and governments. He had received extraordinary recognition at scientific congresses both at home and abroad. The list of his honors was long and well merited.

But in spite of honors and achievements, in spite of his own true worth, Ramón Carrillo's resources were scanty. He had to leave the United States and accept a position as a doctor with an American company exploring for metals. He was stationed at Belém, Brazil, where for a year he toiled in the heat of a Brazilian jungle, and, finally, died. A cerebral hemorrhage brought an end to the life of Ramón Carrillo.

The grief that all who knew him feel over the unhappy years of his illness and his death is profound, but it does not overshadow our joy and gratitude for the privilege of having known so eminent a man, who, with his great gifts, in his generosity, patriotism and urgent devotion to science, had accomplished so much for his generation and for his country.

Those who recall his noble soul and his serene wisdom know—and that is all we need to remember—Ramón Carrillo's life was radiant with inner light and with glory.

International College of Surgeons

Founded by Dr. Max Thorek
(Geneva, Switzerland, 1935 - Washington, D. C., 1940)

A World Federation of General Surgeons & Surgical Specialists, Inc.
"Instrument of the Free World"

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CHICAGO 13, ILLINOIS

Dear Doctor:

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The publication of this Directory will entail an expense to the College of between 25 and 30 thousand dollars. The material is now being prepared for the printers, and we are soliciting your subscription for a copy of this handy and informative volume.

The pre-publication price for a copy of this important book is $5.50 — after publication $7.50.

We would appreciate your cooperation. Please return the attached subscription blank in the enclosed self-addressed envelope, and oblige

Yours sincerely,
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INTERNATIONAL COLLEGE OF SURGEONS

Dr Max Thorek

Dr. Max Thorek, Editor

Directory Department
International College of Surgeons
1516 Lake Shore Drive
CHICAGO 10, ILLINOIS
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sions will be held here on August 8 and 9—and again we will participate and the emphasis will be on rehabilitation.

Details of the Vienna and Munich visits will be given later.

It is my privilege and pleasure to serve as the coordinator of this postgraduate tour. It is my hope that many of our members will join me in this midsummer visit to the countries of northern Europe.

Plans are going forward rapidly in the formation of a program for the North American Federation meeting, which will be held in Chicago in September of this year. Dr. Peter Rosi is again program chairman and will present outstanding speakers from all parts of the world.

The Alabama State Surgical Section is holding its annual meeting on May 21 and 22, at the Russel Erskine Hotel in Huntsville, Alabama. Dr. Edwin V. Caldwell, executive vice-president of the Section, is in charge of arrangements and has prepared a most interesting scientific meeting. In addition to this, he has arranged for a visit on May 21 of all members to the Red Stone Arsenal, which is famous for the research that is being conducted there in the field of rockets and missiles. This should be a great attraction, for the opportunity of seeing this institution does not come often. An added feature of the meeting will be an address by Senator Lister Hill, who has done so much for medicine and health in our country. Senator Hill comes from an old medical family and has a great personal interest in our national health and in health throughout the world.

Ross T. McIntire

TWO GOOD SEASONS........................**Midsummer and Fall**
TWO GOOD REASONS........................**Scientific and Social**

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THE PRESIDENT'S MESSAGE

1959 Around-the-World Postgraduate Clinic Tour

Dr. Edward L. Compere

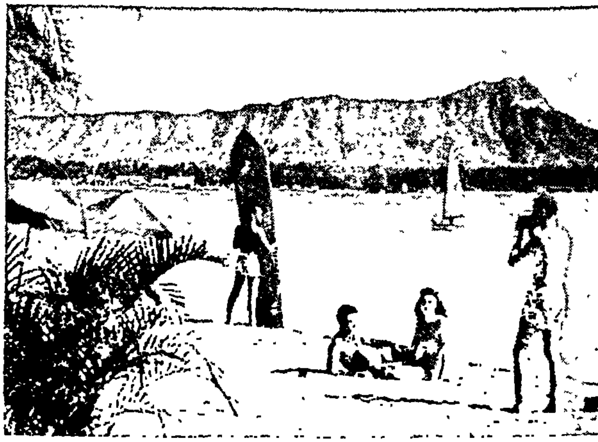
An itinerary for the 1959 Around-the-World Clinical Tour of the International College of Surgeons has been completed. It is a most inviting prospect for me to have the opportunity, as director of the tour, to travel with my friends and to visit our colleagues and co-Fellows of the International College of Surgeons in many different countries of the world. You will receive information from the International Travel Service about this Around-the-World Tour from time to time during the next several months.

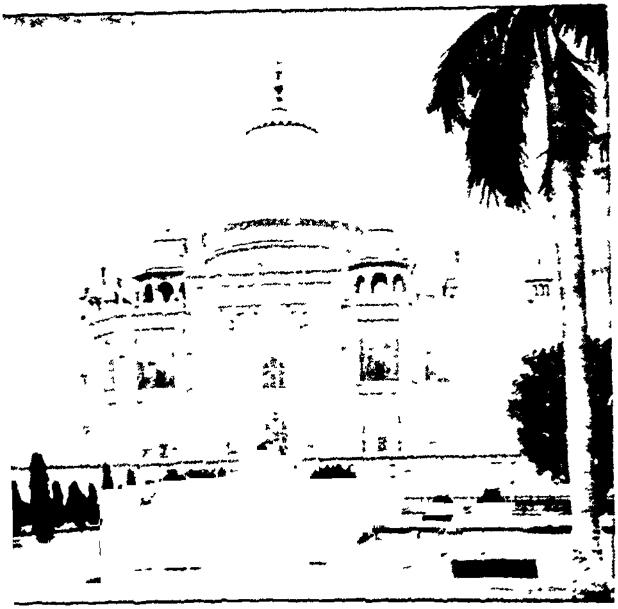
I should like to have the pleasure of outlining some of the highlights of this fascinatingly interesting tour. Virginia Compere, my wife, plans to accompany me, and I hope that many of the other doctors making the trip will find it possible to have their wives with them also.

We are scheduled to leave San Francisco by air service Saturday, October 10, 1959, and to arrive in Honolulu in the mid-afternoon, transferring from the airport to the Hotel Royal Hawaiian. We expect to have some type of get-together with the Fellows of the International College who are living in Hawaii on Sunday, October 11, or Monday, October 12. Most of our time in Honolulu we will be at leisure to enjoy the beautiful scenery, the sunshine, and the famous surf at Waikiki Beach.

We will arrive in Tokyo early in the morning of October 15 and transfer to the Hotel Imperial, where we will have the balance of that day at leisure. Besides Tokyo, we will visit Nikko, Hakone National Park, Yokohama, Kamakura, Miyanoshita, Kyoto and Nara. While in Japan we will have one or more meetings with the Japanese surgeons, including, we hope, a visit to the hospitals of the University of Chiba, where our famous colleague, **Dr. Komei Nakayama,** does some of the most remarkable surgery to be seen anywhere in the world.

From Tokyo we go to Hong Kong October 25, 1959, and will be in Hong Kong through October 30, 1959. A meeting of the Fellows of the International College of Surgeons is scheduled for October 30. From Hong Kong we go to Thailand for three days, then to India for five days, and from India to Ceylon. In India we will be kept busy seeing such interesting places as Agra, Jaipur, Delhi, and Madras. While in Ceylon we hope to take part in helping to form a new Section of the College.


Famed Diamond Head is the background at Waikiki Beach, Oahu, in Hawaii



The Taj Mahal in Agra, India

From Ceylon we fly to Cairo, Egypt, for two days of very fascinating sightseeing; then to Lebanon and a tour of Baalbek, the most amazing of all of the ruins of temples and palaces built by the ancient Romans. We will also have about one-half day in the city of Damascus. From Beirut, Lebanon, it is a flight of less than one hour to the ancient city of Jerusalem in the country of Jordan. From the old city with many nearby biblical sites, including Bethlehem, we will pass through the Mandelbaum Gate into New Jerusalem and spend two days visiting the dynamic little country of Israel.

A Bit of Europe Too

Istanbul, Turkey and the Hotel Istanbul Hilton will be our next stop. After three days of sightseeing in Turkey and visiting with the Fellows of the International College of Surgeons there, we will be off on the last part of the official flight to Athens, Greece, where special arrangements have been made for our entertainment and enlightenment by the Fellows of the Greek Section of the International College of Surgeons.

When we leave Athens, those who prefer may come directly back to the United States, landing in New York. Those who wish to do so can be on their own for visits in various countries in Europe. The official trip from San Francisco back to New York covers a total time of fifty-two days. The cost of first-class transportation for the Tour has been listed at about $3,450.

We Girdle the Earth and Take Motion Pictures in Color

Ours is truly an International College of Surgeons, and it is the international aspect of the College which justifies its existence. Those who cannot accompany us on this trip will have the opportunity of seeing the beautiful Kodachrome pictures made by **Dr. Arnold Jackson** of the 1958 Tour, which will be shown one evening during the North American Federation Congress in Chicago, September, 1959. We hope to have equally good pictures, including Kodachrome movies, to show at various meetings of the Fellows of the College in 1960. If you are interested in this World Clinical Tour, please let me know.

Edward L. Compere

Ruins of the Parthenon in Athens

New York State Surgical Section

INTERNATIONAL COLLEGE OF SURGEONS

ANNUAL SPRING MEETING

Concord Hotel Kiamesha Lake New York

May 28, 29, 30 and 31, 1959

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Dr. Edwin J. Grace, Brooklyn, New York
Dr. Harry J. Greene, Brooklyn, New York
Dr. Earl J. Halligan, Jersey City, New Jersey
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Dr. Arnold S. Jackson, Madison, Wisconsin
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Dr. Edward Solomons, Brooklyn, New York
Dr. Martin L. Stone, New York City
Dr. Paul H. Sullivan, Great Neck, New York
Dr. James W. Watts, Washington, D. C.

New York State Surgical Section

INTERNATIONAL COLLEGE OF SURGEONS

ANNUAL SPRING MEETING

Concord Hotel Kiamesha Lake New York

May 28, 29, 30 and 31, 1959

Dr. Milton Weinberg
GENERAL CHAIRMAN

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Dr. Edwin Grace
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Dr. Charles H. Thom
CHAIRMAN, RECEPTION COMMITTEE

Dr. Sam Clayton
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Dr. Magin Sagarra
Dr. Max M. Simon
Dr. Martin Stone
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Dr. Horace E. Ayers, New York City
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Dr. Peter A. Rosi, Chicago, Illinois
Dr. Magin Sagarra, New York City
Dr. Lindon Seed, Chicago, Illinois
Dr. Henry M. Selby, New York City
Dr. Irving S. Shiner, New York City
Dr. Max Michael Simon, Poughkeepsie, New York
Dr. Samuel Simon, Poughkeepsie, New York
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Dr. Paul H. Sullivan, Great Neck, New York
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Announcement of Research Grant

Offered by the

SECTION ON OPHTHALMOLOGY AND OTO-RHINO-LARYNGOLOGY

International College of Surgeons

The Section on Ophthalmology and Oto-Rhino-Laryngology of the International College of Surgeons has established a Research Grant. This Section is especially interested in the following forms of scientific inquiry.

Furstenberg Plan

A young specialist, a resident, or a medical student may be given an opportunity to explore scientifically under supervision. A panel of experts will be invited to serve in an advisory capacity using related fields in science and medicine as a means of inviting new approaches. The young researcher will be required to submit his idea to this group. If approved, a grant will be made available and the work will be done under the direct supervision of a physician of professorial rank.

Leopold Plan

An ophthalmological or oto-rhino-laryngological summer fellowship may be instituted for a research project for the purpose of giving potential investigators opportunities to do actual research and to become acquainted with the possibilities of ophthalmology and oto-rhino-laryngology.

Scheie Plan

Junior and Senior medical students of superior ability may be encouraged to enter the special fields of ophthalmology and oto-rhino-laryngology.

Participation Plan

A grant may be given in cooperation with other sponsors in order to help make possible major research projects.

Please apply, giving details and ideas, to

Paul C. Craig, M.D., Chairman
Committee on Scientific Work
232 N. Fifth St., Reading Pa.

Alabama Surgical Meeting

Huntsville, Alabama

May 21-22, 1959

The annual meeting of the Alabama Surgical Section of the International College of Surgeons will be held in Huntsville, Alabama, May 21-22.

U. S. Senator Lister Hill

Alabama's senior United States Senator Lister Hill will be the guest speaker at the banquet, and will be introduced by the junior senator, John Sparkman. This should be a dinner long to remember.

The plans for the scientific program are progressing very satisfactorily and the occasion promises to be an important event on every count.

One of the most interesting excursions ever organized for a meeting will be an afternoon tour on May 21 of the Redstone Arsenal for the surgeons and their wives. This is a great courtesy, on the part of Major Gen. John Bruce Medaris, commanding general of A.O.M.C., and his staff, towards the International College of Surgeons.

If the press of duties, national or international, permits, General Medaris and his staff will honor the closing banquet of the meeting with their presence.

Major General John Bruce Medaris

Dr. Wernher Von Braun

The Alabama meeting is of a caliber that warrants the attendance not only of every member of the state section, but of every surgeon who can find it possible to travel to Huntsville to participate in these outstanding proceedings.

Dr. E. V. Caldwell, F.A.C.S., F.I.C.S., of Huntsville, is the executive first vice-president of the Alabama Section and chairman of the meeting.

Official Personnel List

REDSTONE ARSENAL

Major Gen. John Bruce Medaris,
Com. Gen. of A.O.M.C.

Brig. Gen. Joseph M. Colby,
Dep. Com. of A.O.M.C.

Brig. Gen. John A. Barclay,
Com. Gen. A.B.M.A.

Brig. Gen. John G. Shinkle,
Com. Gen. A.R.G.M.A.

Col. Keith T. O'Keife,
Com. Officier Redstone Arsenal

Dr. Wernher Von Braun,
Tech. Director of the D.O.D. A.B.M.A.

Col. Harry C. McClain,
M.C., Post Surgeon

Lt. Col. Hensley Johnson,
M.C., Assistant Post Surgeon

Dr. Burton Shook,
Chief of Army Health Service

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News Briefs

DR. ERIC MOBERG OF SWEDEN ENTERTAINED BY SCHOLARSHIP COMMITTEE

On Wednesday, January 28, 1959, the Scholarship Committee of the International College of Surgeons entertained at a luncheon at the College Home in Chicago for **Dr. Eric Moberg** of Gottseborg, Sweden, a prominent hand surgeon, and **Dr. Francis M. Howard** of Chicago, who is the recipient of a scholarship from the International College of Surgeons. Dr. Howard will journey to Sweden in July of 1959 and will study surgery of the hand with Dr. Moberg for a period of one year. This scholarship is made possible by the contributions from the Woman's Auxiliary of the International College of Surgeons.

Present at the luncheon were a number of young surgeons from the Chicago area. **Dr. Ralph Lidge, Dr. Sidney Shafer, Dr. William Newman** and **Dr. Robert W. Ray,** all of Chicago, were among those present, as were **Dr. Zigmund Kosicki** of El Paso, Texas, and **Dr. William McCall** of San Diego, California, who is a resident in orthopedic surgery at the University of Illinois. Dr. McCall was an all-American football player at Stanford University and during the past seven years has been one of the outstanding players with the Chicago Bears.

Members of the Scholarship Committee who were present at the luncheon were, **Dr. Horace Turner,** chairman; **Dr. Louis Plzak,** and **Dr. Jerome Moses. Dr. Edward L. Compere,** president of the United States Section, together with **Dr. Ross T. McIntire,** the executive director of the college, greeted the visitors.

Following the luncheon, the visitors spent some time going through the International Surgeons' Hall of Fame.

DR. ELBYRNE G. GILL HEADS OPHTHALMOLOGY AND OTOLARYNGOLOGY MEETING

The Gill Memorial Eye, Ear and Throat Hospital and the Elbyrne G. Gill Eye and Ear Foundation will hold their Thirty-Second Spring Congress in Roanoke, Virginia, April 6-11, 1959.

Lectures and demonstrations will deal with ophthalmology, otology, rhinology, laryngoscopy, maxillofacial surgery, bronchoscopy and esophagoscopy.

Dr. Elbyrne G. Gill, F.A.C.S., F.I.C.S., regent of Virginia for the United States Section of the International College of Surgeons, is chief surgeon at the Gill Memorial Eye, Ear and Throat Hospital, Roanoke, Virginia.

DR. IRVING B. GOLDMAN HEADS POSTGRADUATE COURSE IN RHINOPLASTY AND OTOPLASTY

An intensive postgraduate course in rhinoplasty, reconstructive surgery of the nasal septum and otoplasty will be given July 11-24, 1959, by **Dr. Irving B. Goldman,** F.A.C.S., F.I.C.S., D.A.B., and his staff at the Mount Sinai Hospital in affiliation with Columbia University.

Candidates for the course should apply to: Registrar for Postgraduate Medical Instruction, Mount Sinai Hospital, 5th Avenue and 100th Street, New York 29, New York.

DR. CHAMOVE ELECTED PRESIDENT OF EYE RESEARCH FOUNDATION

Dr. Arnold S. Chamove, F.I.C.S., of San Francisco, California, has been elected president of the Eye Research Foundation, Incorporated, a charitable corporation sponsored by the Lion's Club of San Francisco.

THIRD LECTURE SERIES

1958-1959

School of the History of Surgery and Related Sciences
International Surgeons' Hall of Fame
1524 Lake Shore Drive, Chicago

LECTURES BEGIN AT 8:00 P.M.

OCTOBER 21, 1958 . . . . *"Changing Concepts of Disease"—Dr. Ilza Veith, Associate Professor in the History of Medicine, Department of Medicine, University of Chicago, Chicago, Illinois*

NOVEMBER 11, 1958 . . . . *"Epochs in the History of Medicine"—Dr. Morris Fishbein, Professor Emeritus of Medicine, University of Chicago and University of Illinois, Chicago, Illinois*

DECEMBER 2, 1958 . . . . *"The History of Hospitals"—Dr. Charles U. Letourneau, Director, Program in Hospital Administration, Northwestern University, Chicago, Illinois*

JANUARY 13, 1959 . . . . *"The History of Gynecology"—Dr. A. F. Lash, Clinical Professor of Obstetrics and Gynecology, University of Illinois, Chicago, Illinois*

FEBRUARY 3, 1959 . . . . *"The History of Neurosurgery"—Dr. Percival Bailey, Distinguished Professor of Neurology and Neurological Surgery, University of Illinois, Chicago, Illinois*

FEBRUARY 24, 1959 . . . *"Notes About the Role of Physicians in Our Military History"—Dr. George S. Lull, Assistant to the President, American Medical Association, Chicago, Illinois*

MARCH 24, 1959 . . . . . *"Evolution of Medical Illustration"—Thomas S. Jones, M.S., Emeritus Professor of Medical and Dental Illustration, University of Illinois, Chicago, Illinois*

APRIL 14, 1959 . . . . . . *"The History of Surgery of Bones and Joints"—Dr. Edward L. Compere, Professor and Chairman of the Department of Orthopedic Surgery, Northwestern University and Chicago Wesley Memorial Hospital, Chicago, Illinois*

MAY 5, 1959 . . . . *"The Evolution of Otorhinolaryngology and Bronchoesophagology" — Dr. Francis L. Lederer, Professor and Head of Department of Otolaryngology, University of Illinois, Chicago, Illinois*

MAY 21, 1959 . . . . . . *"The History of Plastic Surgery"—Dr. Wayne B. Slaughter, Clinical Professor in Charge of Plastic Surgery, University of Wisconsin (Madison) and Stritch School of Medicine, Loyola University, Chicago, Illinois*

Woman's Auxiliary

THE PRESIDENT'S MESSAGE

On Husbands and the Auxiliary

Mrs. Earl Ingram Carr

In a moment of reflection not long ago, it occurred to me that our Auxiliary offers one of the few avenues of approach open to us which lead to a participation in the professional life of our husbands.

It is superfluous to state, of course, that the rigid ethics of the profession place well-defined restrictions on the exchange of information between surgeon and wife. At the outset this may have been somewhat frustrating to some of us, but, happily, time somehow contrives to make this self-imposed silence a sort of occupational discipline.

Honor of the Profession

Actually these uncompromising ethical standards add to the esteem in which the profession of surgery is held. However, marriage counselors often recommend a healthy exchange of the day's happenings between husband and wife, particularly on a day when he comes home from the office tired and depressed, filled with the trials and tribulations of a hectic day. In a good many professions this is standard procedure, and the husband feels free to divest himself of his problems in an animated conversation with his loved ones.

The Bond of Shared Aims and Purposes

Now, I am not trying to imply that the Auxiliary provides any direct participation in the careers of our husbands. But it certainly does expose us to an integral and stimulating aspect of his professional life. We are privileged to meet people with much the same aspirations, hopes and ideals—people dedicated to improving the lot of the human race.

I know personally that I have felt this surge of stimulation and challenge at any Auxiliary meeting I have attended—indeed, in any Auxiliary activity in which I have participated.

Mutuality of Interests Can Be Cultivated

It is not my intent here to delve into the psychological ramifications of our married lives. This is much too awesome a subject. But it seems to me that the Auxiliary has values that should not be overlooked.

The Auxiliary provides a common ground for both surgeon and wife, an area in which the social amenities and ennobling facets of our lives are enjoyed to the fullest.

There is undeniably an international flavor to the meetings of the College, a one-world aura that encompasses our gatherings. This pooling of information by some of the most profound medical minds in the world is truly an experience that one does not soon forget.

I know I must sound repetitious in my anvil-like chorus on the virtues of an enlarged membership in our Auxiliary. But if our scholarship exchange program is to flourish we must have an ever-growing membership.

Won't you take it upon yourself to send in one new membership TODAY? I sincerely hope so.

Ruth Smith Carr

Allied Medical Career Girls Tour International Surgeons' Hall of Fame

The officers of the International College of Surgeons are happy to have the Surgeons' Hall of Fame visited by young students, to whom the experience invariably is illuminating and not infrequently inspiring.

Students Preparing Themselves for Allied Medical Careers

Particularly pleasing, therefore, was the recent visit of eighty girls, all members of the Allied Medical Career Clubs of Lee County in Illinois.

The sponsor of the visit was **Mrs. Robert LeSage,** of Dixon, Illinois, a member of the board of the Woman's Auxiliary to the United States Section of the International College of Surgeons and chairman of the Auxiliary's memorial fund.

Mrs. Robert LeSage

County-Wide Movement to Encourage Interest

Mrs. LeSage, as chairman of the nurse recruitment committee of the Lee County Medical Society's Woman's Auxiliary and of her city's hospital, was among the women who were instrumental in organizing Allied Medical Career Clubs in every

Members of the Allied Medical Career Clubs of Lee County in Illinois on their recent visit to the International Surgeons' Hall of Fame

high school in the county. The clubs now have approximately a hundred and seventy-five members.

Personally Conducted Tour

Mrs. Wilbur Stitzel, president of the Lee County Auxiliary, and Mrs. LeSage personally conducted the girls to Chicago on their visit to the Hall of Fame. Each school group was accompanied by its own sponsor. Four high schools were represented.

The sponsors present were:

Mrs. Phil Haley, Amboy High School
Mrs. Thomas Coldorola, Franklin Grove High School
Mrs. Harold Coss, Dixon High School
Miss Delores Reitz, Ashton High School

The staff of the Surgeons' Hall of Fame was particularly pleased to welcome the Lee County girls and would be pleased to have them come again.

APPLICATION FOR MEMBERSHIP

I am interested in furthering the program of the Auxiliary to the International College of Surgeons. Enclosed is my check ($10.00 per member) covering membership(s) for the following:

NAME:

ADDRESS:

Make check payable to The Woman's Auxiliary, United States Section, International College of Surgeons, 1516 Lake Shore Drive, Chicago 10, Illinois.

Mrs. Louis Plzak, Treasurer

Section News

Regional Conference on Obstetric and Gynecologic Surgery held in São José do Rio Preto

Brazilian Section Rounds Out Year of Activity

The Brazilian Section of the International College of Surgeons, under the presidency of **Prof. Dr. Mario Degni,** has filled the year with constructive activity.

On the organizational level it has systematized its procedures, and its officers have gone to outlying communities to interest surgeons in the work of the College. The Section has cooperated with various groups in presenting discussions and scientific conferences.

The Section organized a comprehensive course on hematology which was given in the Presidente Prudente Region. The College appointed the lecturers and assigned the subjects to be discussed.

The Section also held, through the courtesy of a sponsor, a series of dinners in various districts of São Paulo which enabled the officers personally to meet the local medical men and establish ties of friendship and discuss with them problems of common interest.

Together with the Society for Gastroenterology and Nutrition of São Paulo, the College held a meeting in Bauru June 7-8, 1958, with members of the College among the most important of the essayists.

At another time, Prof. Degni, together with **Prof. Dr. Matheus Santamaria,** president-elect of the Brazilian Section, having traveled to the Region of Campinas on College matters, participated in a scientific program with the Medical and Surgical Society of Campinas.

Participation in Ninth Medical Congress of Central Brazil

The College was invited to present a surgical program at the Ninth Medical Congress of Central Brazil, held September 3-6, 1958, in the city of Goiania. The theme selected was "Cancer of the Cervix of the Uterus." The subjects dealt with and the essayists were:

Scientific Value of Early Diagnosis of Cancer
PROF. DR. LUCAS MONTEIRO MACHADO, F.I.C.S., Belo Horizonte

Early Diagnosis Through Vaginal Scraping
DR. CAETANO GIORDANO, F.I.C.S., São Paulo

Surgical Treatment of Cancer of the Uterus
  Dr. Francia Martins, F.I.C.S.,
  São Paulo

Value of Radiotherapy in the Case of Cancer of the Uterus
  Dr. Americo Rufino, F.I.C.S.,
  São Paulo

Cancer of the Uterus and Pregnancy
  Dr. Domingos Andreucci, F.I.C.S.,
  São Paulo

Medical Education Discussed

At the São Paulo Regional Meeting held in São Paulo during November, in addition to the presentation of scientific subjects, serious consideration was given to the problem of medical education, particularly as to the length of the curriculum.

Obstetric and Gynecologic Surgery

The Brazilian Section organized a regional conference on obstetric and gynecologic surgery in the city of São José do Rio Preto on June 26, 1958. Among participants of the conference were Dr. Domingos Delascio, F.I.C.S., Dr. Sylla Orlandini Mattos, F.I.C.S., Dr. José Bonifacio Medina, F.I.C.S., Dr. Onofre de Araujo, F.I.C.S., and Dr. João de Sampaio Góes, F.I.C.S.

Region of Lins Organized

On August 9-10, 1958, the Region of Lins of the Brazilian Section of the International College of Surgeons was formally organized. Members of the Region were presented with their Fellowship diplomas. The following were inducted into office:

Dr. Geraldo Andrade de Carvalho
  PRESIDENT

Dr. João Baragati
  SECRETARY

Dr. Nestor De Cunto
  TREASURER

One of the series of three dinners held in various districts of São Paulo

Dinner in São Jasé do Rio Preto

Wide Range of College Participation

The Brazilian Section organized a scientific meeting in the town of Petropolis with the cooperation of the Regions of Petropolis, Niteroi, Rio de Janeiro and Juiz de Fóra.

In the region of Marilia the subject of conference discussion was the surgeon's part in insuring good hospital management.

Symposium on Ocular Tumors in Honor Dr. J. Penido Burnier

A symposium on ocular tumors was held at the Penido Burnier Institute in Campinas in honor of Dr. J. Penido Burnier. A number of members of the Campinas Region are associated with the Penido Burnier Institute, including **Prof. Dr. Gabriel Oliviera Da Silva Porto, Dr. Antonio Augusto De Almeida, Dr. Manoel Alfonso Ferreira, Dr. João Lech, Jr.,** and **Dr. Raul Guedes De Mello.**

Brazilian Section Sets up Program of Postgraduate Scholarships and Prizes

The Brazilian Section of the International College of Surgeons has set up an extensive program of postgraduate scholarships and prizes in various branches of surgery.

In orthopedics, postgraduate scholarships were made available in the service of **Prof. Define** of the Santa Casa to members of the College both in Brazil and in foreign countries. The scholarships will include board and lodging and a monthly cash allowance.

A similar scholarship is available in urology with **Dr. Matheus Santamaria** at the Santa Casa de Misericordia in São Paulo.

The Section is also offering prizes for original scientific work, including the publication and distribution of the written reports.

TO PERPETUATE THAT WHICH WE BUILD

Include a gift to the International College of Surgeons among your annual contributions. Include the International College of Surgeons among the benefactions in your will.

COLOMBIA

Dr. Alberto Vejarano-Laverde, treasurer of the Colombian Section of the International College of Surgeons, is the secretary and active organizer of the monthlong seminar symposium on cardiovascular surgery sponsored by the *Fundación A. Shaio* in Bogotá during July, 1959.

The proceedings will be presented simultaneously both in Spanish and in English.

Definite sessions are to be devoted to:

Pulmonary hypertension
Surgical treatment of congenital cardiopathies
Coronary disease
Valvular diseases
Aneurisms of the aorta and large vessels
Extracorporeal circulation and hypothermy
Correlation of electrocardiography, angiocardiography, and other complementary examinations as diagnostic methods

Dr. Vejarano-Laverde is seeking the widest possible participation by qualified practitioners and advanced students both from Colombia and from abroad. He solicits their questions and suggestions. Letters should be addressed to

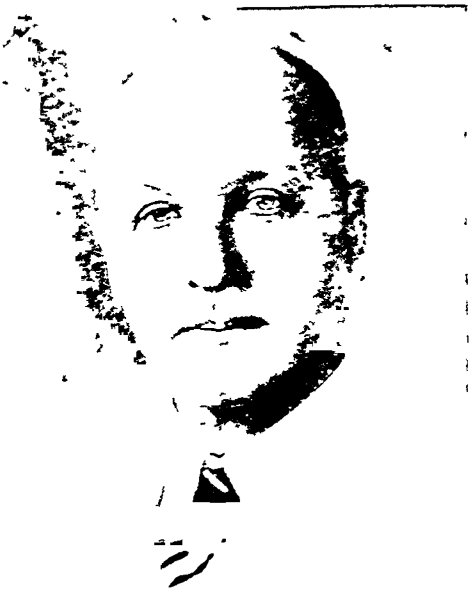
Dr. Alberto Vejarano-Laverde
Fundación A. Shaio, Cra. 13 No. 43-23
Bogotá, Colombia, South America

EL SALVADOR

At a meeting of the El Salvador Section of the International College of Surgeons, held January 16, 1959, the following officers were elected:

PRESIDENT
Dr. Mariano Samayo, F.I.C.S.
VICE-PRESIDENT
Dr. Humberto Escapini, F.A.C.S., F.I.C.S.
SECRETARY
Dr. Antonio Pineda M., F.I.C.S.
TREASURER
Dr. Dimas Funes Hartman, F.I.C.S.

FINLAND



Dr. Juuso Kivimäki
President, Finland Section

Members of the Finland Section of the International College of Surgeons convened for their annual meeting and election of officers in Helsinki on February 6, 1959, with Prof. Dr. A. R. Klossner, F.I.C.S., presiding.

Elected for the coming term of office are:

PRESIDENT
Kivimäki, Juuso, M.D., F.I.C.S., professor of oral surgery at the University of Helsinki

VICE-PRESIDENT
Vara, Peavo, M.D., F.I.C.S., professor of obstetrics and gynecology at the University of Helsinki

SECRETARY
Blomquist, Harry E., M.D., F.I.C.S., lecturer in surgery at the University of Helsinki

TREASURER
Aro, Lauri, M.D., F.I.C.S., lecturer in anesthesiology at the University of Helsinki

FRANCE

Annual Meeting of Section to be held at Lyons June 19-21, 1959

The annual meeting of the French Section of the International College of Surgeons will be held at the Faculty of Medicine in Lyons, June 19-21, 1959.

The proceedings will comprise a reception in honor of the congressists on the evening of Thursday, June 18; the opening assembly on the morning of Friday, June 19; scientific sessions on both Friday and Saturday; visits to the surgical services of the various hospitals of Lyons and to surgical demonstrations; luncheon at *the Hospices Civils; the formal banquet* Saturday evening, and on Sunday an excursion to Beaujolais.

Prof. Jean Creyssel, Lyons, is president of the French Section; Dr. Louis Welti, Paris, and Prof. Truc, Montpellier, are vice-presidents; Prof. Raymond Darget, *Bordeaux, is the secretary general, and* Prof. A. Pierre LaChapèle, Bordeaux, the treasurer.

A committee of ladies is planning a tour of the museum and several parties for Friday and Saturday.

Prof. Agr. J. Francillon, of Lyons, is the secretary general of the meeting. Corre*spondence concerning participation should* be addressed to Mlle. Coste, administrative secretary, 13, place Carnot, Lyon.

INDIA

Section Elects Officers for Current Year

On December 12, 1958, the Executive Committee of the Indian Section of the International College of Surgeons met at the K. G. Medical College, Visakhapatnam. In the absence of the president, Dr. A. V. Baliga, the president-elect, Dr. C. P. V. Menon, presided. Drs. S. K. Sen, A. E. deSá and P. K. Sen were present.

Dr. Menon read the minutes of the last general meeting and of the last executive committee meeting and the minutes were confirmed. He then read the annual report of the Section for 1958, after which the hon. treasurer placed before the committee his report on the financial condition of the Section.

The executive committee recommended the following officers for the ensuing term:

PRESIDENT
Dr. C. P. V. Menon, Madras

PRESIDENT-ELECT
Dr. B. N. Balakrishna Rao, Gwalior

VICE-PRESIDENTS
Dr. K. G. Munsif, Bombay
Dr. R. H. Betts, Vellore
Dr. M. Krishnamurthi, Vizag
Dr. V. G. Vaishampayan, Sholapu
Dr. B. N. Sinha, Lucknow

HON. SECRETARY
Dr. A. E. deSá, Bombay

HON. TREASURER
Dr. P. K. Sen, Bombay

CREDENTIALS COMMITTEE
Col. K. G. Pandalai, Madras
Dr. K. G. Munsif, Bombay
Dr. A. E. deSá, Bombay

FINANCE COMMITTEE
Dr. K. G. Munsif, Bombay
Dr. A. E. deSá, Bombay
Dr. G. D. Adhia, Bombay

Drs. P. S. Jhaver and Shantilal J. Modi were advanced to Fellowship in the International College of Surgeons as from January 1, 1959.

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Dr. M. A. Ghooi, Bhopal

Operative Treatment of Carcinoma of the Tongue, followed by a color film
Dr. S. P. Srivastava, Agra

It was decided to hold the next conference at Jaipur during December 1959.

ITALY

Interesting Meetings in Conjunction with Surgical Societies

The Italian Section of the International College of Surgeons held a meeting in connection with the Sixtieth National Congress of the Italian Surgical Society in Genoa, October 24-26, 1958. The meeting was held at the *Nuovo Lido d'Albaro.*

The Congress opened with great formality. About forty guests of honor were present, including public officials and other persons of high distinction.

At the commemorative service held for deceased members, **Prof. Dr. A. Mario Dogliotti,** F.A.C.S. (Hon.), F.I.C.S. (Hon.), *director* of the clinic of general surgery at the University of Turin and president-elect of the International College of Surgeons, delivered an eloquent eulogy as a tribute to the memory of Prof. Raffaele Paolucci di Valmaggiore, M.D., F.I.C.S. (Hon.), a former president of the Italian Surgical Society and Prof. Dogliotti's predecessor as president-elect of the International College of Surgeons.

The chief essayists at the scientific sessions of the Congress were:

Prof. Dr. Alberto De Blasi. F.I.C.S., professor of pathology at the University of Bari, whose presentation dealt with *Tumors of the Head of the Pancreas and Ampula of Vater;*

Prof. Dr. Giuseppe Salvatore Donati, F.I.C.S., professor of surgical pathology at the University of Pavia, who spoke on *Tumors of the Salivary Glands,* and

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The Italian Section of the International College of Surgeons held a scientific session jointly with the Surgical Society of Rome on Friday, November 28, in the auditorium of the Surgical Clinic of the Medical School of the University of Rome, in honor of the surgeons of the United States Section of the College who were participating in the Around-the-World Tour.

Prof. Pietro Valdoni, eminent as a surgeon and recently elected president of the Italian Section of the International College of Surgeons, delivered an address of welcome to the visiting surgeons.

Drs. Arnold Jackson, Winchell McK. Craig, Herbert Hayes and Finis Cooper, of the United States delegation, presented scientific dissertations, at the conclusion of which **Prof. Ermanno Mingazzini,** president of the Surgical Society of Rome, conferred upon the essayists honorary membership in the Society.

FRANCE

Annual Meeting of Section to be held at Lyons June 19-21, 1959

The annual meeting of the French Section of the International College of Surgeons will be held at the Faculty of Medicine in Lyons, June 19-21, 1959.

The proceedings will comprise a reception in honor of the congressists on the evening of Thursday, June 18; the opening assembly on the morning of Friday, June 19; scientific sessions on both Friday and Saturday; visits to the surgical services of the various hospitals of Lyons and to surgical demonstrations; luncheon at the *Hospices Civils;* the formal banquet Saturday evening, and on Sunday an excursion to Beaujolais.

Prof. Jean Creyssel, Lyons, is president of the French Section; **Dr. Louis Welti**, Paris, and **Prof. Truc**, Montpellier, are vice-presidents; **Prof. Raymond Darget**, Bordeaux, is the secretary general, and **Prof. A. Pierre LaChapèle**, Bordeaux, the treasurer.

A committee of ladies is planning a tour of the museum and several parties for Friday and Saturday.

Prof. Agr. J. Francillon, of Lyons, is the secretary general of the meeting. Correspondence concerning participation should be addressed to **Mlle. Coste**, administrative secretary, 13, place Carnot, Lyon.

INDIA

Section Elects Officers for Current Year

On December 12, 1958, the Executive Committee of the Indian Section of the International College of Surgeons met at the K. G. Medical College, Visakhapatnam. In the absence of the president, **Dr. A. V. Baliga**, the president-elect, **Dr. C. P. V. Menon**, presided. **Drs. S. K. Sen, A. E. deSá** and **P. K. Sen** were present.

Dr. Menon read the minutes of the last general meeting and of the last executive committee meeting and the minutes were confirmed. He then read the annual report of the Section for 1958, after which the hon. treasurer placed before the committee his report on the financial condition of the Section.

The executive committee recommended the following officers for the ensuing term:

PRESIDENT
Dr. C. P. V. Menon, Madras

PRESIDENT-ELECT
Dr. B. N. Balakrishna Rao, Gwalior

VICE-PRESIDENTS
Dr. K. G. Munsif, Bombay
Dr. R. H. Betts, Vellore
Dr. M. Krishnamurthi, Vizag
Dr. V. G. Vaishampayan, Sholapu
Dr. B. N. Sinha, Lucknow

HON. SECRETARY
Dr. A. E. deSá, Bombay

HON. TREASURER
Dr. P. K. Sen, Bombay

CREDENTIALS COMMITTEE
Col. K. G. Pandalai, Madras
Dr. K. G. Munsif, Bombay
Dr. A. E. deSá, Bombay

FINANCE COMMITTEE
Dr. K. G. Munsif, Bombay
Dr. A. E. deSá, Bombay
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Medical News Front

AMERICAN GOITER ASSOCIATION TO CONVENE IN CHICAGO

The 1959 meeting of the American Goiter Association will be held at the Drake Hotel, Chicago, April 30-May 2.

The program for the three-day meeting will consist of papers and discussions dealing with the thyroid gland, its physiology, pharmacology, pathology and therapy.

WORLD MEDICAL ASSOCIATION TO MEET IN CANADA

The Canadian Medical Association will be host to the XIIIth General Assembly of the World Medical Association to be convened in Montreal, Canada, September 7-12, 1959.

The tentative program includes:

Medical Editors' Conference
Monday, September 7
Socio-Medical Affairs
Thursday, September 10
Scientific Program
Wednesday, September 9

Additional information relative to the Assembly may be obtained from:

The Secretary General
The World Medical Association
10 Columbus Circle
New York 19, New York

$200,000/$600,000 Limits of Liability are now available to members covered under the ICS Group Malpractice Insurance Plan.

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Wm. J. Burns

Director of Advertising for the International College of Surgeons, announces the appointment of three regional representatives for The Journal of the International College of Surgeons to aid in servicing advertisers and their agencies.

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The Research Horizon

GEOGRAPHICAL ASPECTS OF APPENDICITIS

Supplement No. 221 to *Acta Chirurgica Scandinavica,* published in Stockholm, Sweden, reviews recent ethnomedical investigation into the incidence of appendicitis, maps the disease, and attempts to correlate its prevalence with the prevalence of other diseases. The study was conducted by Sven Müller and concluded in May 1955.

The study maintains that the peculiar geographic distribution of acute appendicitis—that is, its rare occurrence or entire absence in tropical and subtropical regions—cannot be explained by congenital racial immunity or by differences in diet. Instead, this immunity seems to follow the same immunological laws as operate in other regions. It also seems that it is acquired through atypical, subclinical infections in early childhood. There is striking conformity between the incidence of tonsillitis and appendicitis in many countries. This applies particularly to haemolytic streptococcal tonsillitis (i.e. scarlet fever).

As far as scarlet fever is concerned, climatic conditions are no doubt important. They are also probably significant in the case of appendicitis. But recent changes in the statistics of the incidence of these diseases—as a greater number of natives in tropical and subtropical countries and elsewhere accept Western standards of living—seem to establish that climatic influence cannot be the exclusive reason, and that we must look to immunity acquired by primitive peoples following latent infections during childhood for solution to the problem.

The study concludes with the hypothesis that if such an immunizing infection (perhaps even with haemolytic streptococci) is true also of appendicitis, we have the explanation of all otherwise incomprehensible features of the geography of this disease.

TREATMENT OF VIRAL SYNDROMES WITH A LIPO-PROTEIN-NUCLEIC ACID COMPOUND (RETICULOSE)

Writing in the *Virginia Medical Monthly* (84:347, 1957), Drs. Robert H. Anderson and Ralph M. Thompson. of Alexandria, Virginia, reported on 5 cases of acute viral infections which were treated at Alexandria Hospital, Alexandria, Virginia, with intramuscular injections of Reticulose, a lipo-protein-nucleic acid complex, after the apparent failure of the usual antibiotics.

According to the authors, immediate improvement was noted clinically and symptomatically.

They stated that Reticulose was well tolerated by all of the five patients and produced no evidence of toxic manifestations or side effects.

In all of the patients they found improvement within twenty-four to thirty-six hours after Reticulose was started, which was manifested by clinical and symptomatic improvement.

Doctors Anderson and Thompson conclude that Reticulose is a definite antiviral substance and should be considered in the treatment of viral infections.

They now report that at the time the above-mentioned article was submitted for publication, several Virginia physicians began the treatment of viral infections with Reticulose, and that now they have a report of 41 cases of viral infections which have responded favorably to this product, these cases including influenza, encephalitis, viral hepatitis, infectious mononucleosis, viral pneumonia, uncomplicated mumps and measles.

In Memoriam

PHILMOUR MURRAY ALEXIS BEIN

M.D., F.I.C.S., D.A.B.

1906-1959

Dr. Philmour M. A. Bein, F.I.C.S., D.A.B., of Mansfield, Ohio, died suddenly, on January 9, 1959, at the Mansfield General Hospital, where he had been staff surgeon since 1936.

Dr. Bein was born in Chicago in 1906, but moved to Mansfield with his parents while a boy. Educated at the Mansfield High School, he was a graduate of the University of Pennsylvania, with the B.S. degree, a member of the class of 1928. Four years later he received his M.D. degree from the University of Pennsylvania Medical School.

He interned at the Philadelphia General Hospital for two years, and served as resident at the Cincinnati Jewish Hospital, Cincinnati, Ohio, from 1934 to 1935.

He returned to Mansfield and opened his surgical practice in 1936.

The same year he became affiliated with the Mansfield General Hospital, where he was lecturer in surgery at the nursing school and chairman of the training program for residents.

Dr. Bein was also on the surgical staffs of the Peoples' Hospital and the Madison Hospital, both in Mansfield.

Dr. Bein was a veteran of four years' service with the Army Medical Corps in World War II, assigned to the Pacific Theatre, and was stationed for a time on Guadalcanal.

He was highly esteemed by his associates and the members of his community. His untimely death took him from the profession which was the very essence of his being and from the service to his fellow man which he considered the purpose of his life.

The officers and members of the board of the College extend to Mrs. Joseph Bein, Dr. Bein's mother, with whom he made his home, and to his brother and his sisters, their very sincere sympathy.

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Vol. 31 APRIL, 1959 No. 4

General Surgery

A Modification of Bassini-Rienhoff's Herniorrhaphy

With Preservation of the Functional Mechanism of the Inguinal Canal

I. KOPEL, M.D., AND B. MARKOWSKI, M.D., F.I.C.S.
BELIZE, BRITISH HONDURAS, CENTRAL AMERICA

INGUINAL hernia is one of the most common conditions confronting the surgeon in the tropics.

Racial Susceptibility.—The existence of an innate racial predisposition to inguinal hernia in Africans would seem to be widely accepted, although this is not so well established as the predilection to umbilical hernia, which is far more common in the African than in any other race. No comparative statistical data can be given, but the impression is that congenital hernia and hydrocoele, as well as imperfectly descended testicles, with hernia or potential hernia, are more common in the predominant African race than in the Spanish-American, European and aboriginal Indian sections of the population of British Honduras. Perhaps, therefore, the racial factor is etiologically important. One could also speculate on a racial factor governing the incidence of the so-called "high internus position," which will be discussed later, and the widening of the space between the conjoined tendon and the inguinal ligament. It would be unprofitable, however,

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[illegible] Government Hospital, Belize.
[illegible] June 17, 195[illegible]

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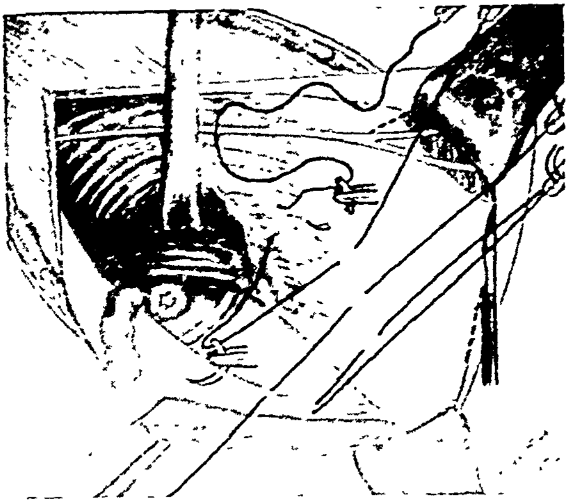
(suitably incised for the passage of the cord) to the transversalis fascia. Such procedures, however, are practicable only in cases of early hernia and not in the presence of a long-standing, large hernia with a wide fixed ring and a permanent structural defect in the posterior wall of the inguinal canal. This defect, as was emphasized by Schmieden, develops in the triangular gap between the lower border of the internal oblique and the transversus abdominis above, the inguinal ligament below and the edge of the rectus medially; here, the posterior wall of the inguinal canal consists only of the parietal peritoneum and the transversalis fascia. The development of the latter is not constant and usually not strong. This triangle becomes progressively wider as the hernia enlarges. A further important factor is the so-called high internus position, that is, the lower borders of the internal oblique and that of the transversus abdominis are almost horizontal and inserted in the rectus sheath about 2 to 4 cm. above the pubic symphysis. This position is observed rather frequently (present in 76 of 100 dissections on cadavers performed by Polya, as cited by Schmieden), and is either primary or secondary, consequent on hernial enlargement.



The topographic sketch of inguinal canal showing (1) internal oblique and transversus abdominis muscles separated at their lower borders; (2) relaxing incision, and (3) sutures employed in method of herniorrhaphy described.

For a large hernia McVay and Anson advocate suture of the conjoined tendon to the pectineal ligament (Lotheissen's principle of inguinal repair of femoral hernia). They maintain that the Bassini operation is not rational, since the conjoined tendon is normally inserted, with its lowermost fibers, into the pectineal ligament and not into the inguinal ligament. Whether the conjoined tendon normally has a weak attachment to the medial half of the inguinal ligament or not, however, many surgeons prefer Bassini's operation. Not only is the aforedescribed triangle the weak point of the inguinal canal, it is also the "achilles' tendon" of Bassini's operation. The reason for this is that the tension required to close the defect causes either cutting out of the sutures or splitting of the tendinous structures. Even worse, it may cause necrosis and destruction of the muscle fibers strangled in the grasp of the sutures. According to Noetzel (cited by Schmieden), the "high internus position" is the main cause of recurrent hernia; this does not occur through the internal ring as a recurrence of the old indirect hernia but as a new direct hernia that develops through the triangular aperture aforementioned. The fact that this is not entirely correct will be mentioned later In this connection, however, an important operative measure is the relaxing incision of Rienhoff, also known as Tanner's "slide," in which a vertical incision is made in the anterior sheath of the rectus, as near its medial border as possible, to expose the rectus and pyramidalis. With the aid of this incision relief of tension is obtained, and the conjoined tendon can be brought downward and sutured easily to Poupart's or Cooper's ligament, whichever to theorize on racial factors, which at best are notoriously difficult to trace and to interpret, particularly in a heterogeneous and racially mixed population.

With regard to the choice and decision as to the actual method of operation to be employed for inguinal hernia, the problem is not simple and remains as before, a vexed one.

Functional Anatomic Features, Development Mechanism, Operative Procedures and Other Relevant Points.—It is generally accepted that the main force of the intra-abdominal pressure in the erect or sitting posture is exerted upon the inguinal and femoral canals. This pressure is met by contraction of the abdominal muscles. The arched muscle fibers of the lower border of the internal oblique and transversus abdominis straighten and descend so as to occlude the inguinal canal and buttress the vulnerable posterior wall against the outward thrust of intra-abdominal pressure. Lytle, who has reviewed the functional anatomic aspects of the internal inguinal ring, stressed the importance of preserving the valvelike mechanism normally effected by the divergent movement of the transversus abdominis on contraction and of the fibrous internal ring suspended from its posterior surface, viz. downward, and upward and outward respectively. These movements and the simultaneous apposition of the inner edge of the fibrous ring to the cord, on a rise of intra-abdominal pressure, prevent protrusion through the ring.

After calling attention to the predisposition of the African race to inguinal hernia, the authors outline the anatomic, physiologic and pathologic aspects of the condition, as well as its mechanism of development. Bassini's, McVay and Anson's, and Lytle's operations, Reinhoff's relaxing incision and other pertinent points are discussed. One of the authors has repaired 199 inguinal hernias in five years by the unmodified Bassini-Reinhoff technic, with only 2 recurrences. The other author has devised a method of closing the defect in the posterior wall of the inguinal canal with minimal tension, so that the resulting repair is flexible rather than rigid and the normal contractility of the muscular structures preserved. Seventy-three inguinal hernias have been repaired by this method in one and one-half years, with no recurrences up to the time of writing.

The mobility of the internal ring is lost by stitching the free edge of the internal oblique and transversus abdominis and their conjoined tendon to the inguinal ligament as in Bassini's operation. Lytle confines himself, therefore, to narrowing the fibrous internal ring by suturing together the edges of its margins after removal of the sac. Removal of the sac alone may be all that is necessary for small congenital indirect hernia in infants, children and adolescents with otherwise normal structures. The natural valvular mechanism of the internal ring recovers its normal function. It is obvious that simple herniotomy and Lytle's operation have a limited application.

On occasion, if the transversalis fascia is strong enough, it may be possible to strengthen the posterior wall of the inguinal canal by plication or suture of the transversalis fascia to the inguinal ligament. This may be further reinforced by suturing over the medially detached and dissected cremaster and/or the lower flap of the split external oblique aponeurosis (suitably incised for the passage of the cord) to the transversalis fascia. Such procedures, however, are practicable only in cases of early hernia and not in the presence of a long-standing, large hernia with a wide fixed ring and a permanent structural defect in the posterior wall of the inguinal canal. This defect, as was emphasized by Schmieden, develops in the triangular gap between the lower border of the internal oblique and the transversus abdominis above, the inguinal ligament below and the edge of the rectus medially; here, the posterior wall of the inguinal canal consists only of the parietal peritoneum and the transversalis fascia. The development of the latter is not constant and usually not strong. This triangle becomes progressively wider as the hernia enlarges. A further important factor is the so-called high internus position, that is, the lower borders of the internal oblique and that of the transversus abdominis are almost horizontal and inserted in the rectus sheath about 2 to 4 cm. above the pubic symphysis. This position is observed rather frequently (present in 76 of 100 dissections on cadavers performed by Polya, as cited by Schmieden), and is either primary or secondary, consequent on hernial enlargement.

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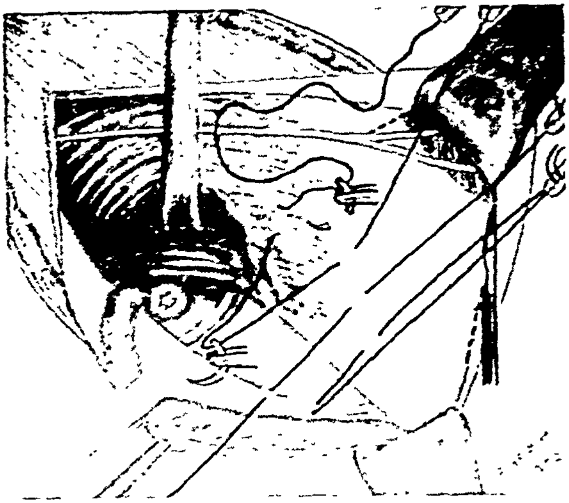

The topographic sketch of inguinal canal showing (1) internal oblique and transversus abdominis muscles separated at their lower borders; (2) relaxing incision, and (3) sutures employed in method of herniorrhaphy described.

method is employed. In Kocher's procedure a curved incision is made in the anterior rectus sheath and the raised flap turned down outward and stitched without tension to Poupart's ligament.

The type of large indirect hernia is sometimes difficult to determine, owing to the fact that the internal ring is dislocated inward by the downward-expanding neck of the hernial sac, together with the inferior epigastric vessels. The inguinal ring thereby comes to lie opposite the external ring, thus simulating a direct hernia. The majority of recurrent hernias are indirect. In those which at first sight appear to be direct, involvement of the internal ring discloses their true nature. Bulging of the peritoneum and intraversalis fascia between the fibrous internal ring and the inferior epigastric vessels with medial displacement of the latter, is also a frequent concomitant observation in the presence of indirect hernia. A combined, double or so-called "pantaloon" or "saddle-bag" type of hernia may, however, result, with a sac on either side of the inferior epigastric vessels. This may be dealt with by transposition, i.e., inversion and withdrawal of the direct sac underneath the inferior epigastric vessels in the indirect sac, the two being converted into one by Hoguet's maneuver.

Sliding hernia *(hernie par glissement)*, in most cases, can be dealt with simply by restitution of the bowel—or the bladder, if there is true sliding hernia of this organ—into the abdomen by a deliberate *réduction en masse* and closure of the peritoneal opening by a purse-string suture.

During a five-year period, 199 inguinal hernias were repaired by one of us (B.M.), who practiced the aforedescribed relaxing rectus sheath incision of Rienhoff and suture of the conjoined tendon to the inguinal ligament by Bassini's method. In this series only 2 recurrences are known to have occurred, a result that bears witness to the eminent efficiency of the method.

In a series of 73 cases reported by one of us (D.K.) there were 56 cases of "pure" indirect hernias (76.7 per cent), and 4 of "pure" direct hernias (5.47 per cent). Nine were bilateral and were operated on in one session; 1 was ipsilateral inguinal and femoral (both repaired inguinally, by suturing the lower extremity of Poupart's ligament to Gimbernat's ligament and the pectineal fascia, and then by the method to be described); 2 were cecal sliding hernias; 1 a vesicular sliding hernia; 2 "saddle-bag" hernias, and 2 recurrent hernias previously operated on elsewhere, the Bassini-Rienhoff method of repair, modified as follows, was employed.

Technic.—The medial flap of the incised external oblique aponeurosis is retracted and separated, as near to the linea alba as possible, by blunt dissection from the internal oblique aponeurosis, forming here the anterior rectus sheath. The latter is then incised generously lengthwise at the line where it is inseparably blended with the linea alba. To obtain additional relaxation of tension, the upper end of this incision may have to be prolonged for a short distance laterally across the fibers of the rectus sheath, which gives the complete incision the shape of an inverted L. The mobilized anterior rectus sheath (and consequently the conjoined tendon) is sutured; not, however, by its free edge as in Bassini's operation, but as follows: A series of interrupted sutures of braided silk is passed superficially in Lembert's inverting manner through the surface of the aponeurosis of the internal oblique, approximately where it crosses the lateral edge of the rectus muscle, and then as simple looped stitches from within outward, around the inner edge of the inguinal ligament (see illustration). The sutures, previously clipped with hemostats, are tied after all have been inserted, whereupon the fibromuscular edge rolls inward.

In this way the defect in the inguinal canal is closed snugly and safely without undue tension; extra reinforcement is provided by the rolled-in conjoined tendon, and its edge is left free and mobile. In our operation with this method of apposition the repair is effected without anchoring the transversus abdominis and internal oblique completely. That is, the downward movement of the lower border on contraction, which acts as a natural barrier against protrusion through the ring and safeguards the posterior wall of the inguinal canal during strain, is still possible; thus the result is a flexible repair, in contradistinction to the rigid repair obtained by other methods. Furthermore, the normally active muscular contractions of this region will prevent the unattached musculotendinous border from becoming adherent and immobile during the immediate postoperative period. Final cicatrization will be followed by readaptation, and the retentive function of the repaired fibromuscular apparatus of the inguinal canal will thus be restored with as little impairment as possible.

Additional Procedures.—In this series, when the fibrous internal ring was unduly enlarged it was reduced as follows: The margins were dissected free and held by mosquito or Allis forceps. The edges were then stitched together below the cord with interrupted mattress sutures of fine chromic catgut so as to overlap the medial on the lateral edge. If the lateral rim of the ring is thin and easily frayed, repair and closure can be effected by a transverse darn.

As an extra reinforcement, in 9 cases of indirect hernia in which the cremaster was particularly well developed, as it frequently is in such cases, it was possible to dissect it completely from the neck of the sac and, using mattress sutures of chromic catgut, to suture the resulting strong muscle sheet snugly to the transversalis fascia in the angle between the internal oblique and the rectus, a modified Brenner's procedure (Schmieden).

In most cases the repair has been performed under the cord, so that it rests upon the reconstructed layer. The external oblique aponeurosis is then closed over the cord, by imbrication of the upper flap over the lower, with a double row of widely spaced interrupted chromic catgut or silk sutures, i.e., Woelfler's method (Schmieden).

There was no recurrence in the 73 cases in which repair was accomplished by this method up to an average follow-up period of eighteen months.

Unless the musculotendinous structures of the inguinal canal have completely given way and become permanently incompetent and irreparable so as to make the outlook of any operation unpromising, which was not the case in this series, the method of repair here described is at least as expedient as other more elaborate and less physiologic ones. Admittedly, the series is small and only short-term results are available, and the final proof must be left to the test of time; nevertheless, it seems that a description of the technic in a brief report is warranted.

RESUMEN

En esta comunicación se someten a breve discusión los puntos sigunientes: La predisposición racial de las gentes de descendencia africana a la hernia inguinal; los principios pertinentes a la anatomia funcional del canal inguinal, así como el mecanismo de producción de las hernias de dicha región; los procederes operatorios según Bassini, McVay, Anson el de Lytle, asícomo la incisión de Rienhoff con objecto de producir liberación y relajamiento de la

hojo anterior de la vaina del m. recto del abdomen; y otros puntos que vienen al caso.

Se repararon (por Markowski) 199 hernias inguinales en pacientes de origen predominantemente africano, según el método no modificado Bassini-Rienhoff, con, únicamente, dos reproducciones conocidas durante el lapso de cinco años.

Se describe un método (ideado por Kopel) según el cual se practica una inción relajodora en la hoja anterior de la vaina del m. recto del abdomen a lo largo de la línea de fusión de las aponeurosis de los ms. oblicuo mayor y menor con la línea alba. Se cierra el defecto de la pared posterior del canal inguinal con el mínimo de tensión mediante la sutura de la aponeurosis del m. obicuo menor, en el punto donde cruza el borde lateral del m. recto del abdomen, al ligamento inguinal, efectuando así una reconstrucción flexible y segura. Se cree que al dejar, por este método, el margen fibro-muscular aproximado pero libre y móbil consérvase la contractibilidad normal de las estructuras musculares del conducto inguinal. Esto es esencial si se quiere lograr un mecanimo valvular eficiente contra la protrusión a través del anillo inguinal interno, así como también una barrera de sostén acolchada a través del hiato en la pared abdominal del canal inguinal. Se repararon con este este proceder 73 hernias inguinales en enfermos predominantemente africanos y durante el transcurso de año y medio de control post-operatorio no se presentó una sola reproducción hasta la fecha.

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SUMARIO

Discute a predisposição racial dos Africanos para a hernia inguinal; os principios da anatomia funcional do canal inguinal e o mecanismo das hernias; as tecnicas de Bassini, McVay, Anson e Lytle; a incisão de Reinhoff e demais topicos do assunto. Em cinco anos operou 199 africanos (Markowski) pelo método Bassini-Reinhoff com apenas duas recidivas.

O A. descreve um método em que faz uma incisão relaxadora na bainha do reto anterior ao longo da linha de fusão das aponeuroses do obliquo interno e externo na linha alba, fechando o defeito da parede posterior do canal inguinal comtensão mínima, sutura da aponevrose do obliquo interno na porção onde cruza a margem do reto. Consegue assim um reforço flexivel e seguro. Acha o A. que êsse método preserva a contractilidade normal da musculatura o que considera essencial para um mecanismo valvular que se oponha á protrusão pelo anel ingui nal interno e uma barreira contra o hiato natural da parede abdominal. Por este método operou 73 pacientes em um ano e meio sem recidiva. Medidas adicionais foram utilisadas (Kopel): Alargamento do anel inguinal interno: sutura do cremaster a aponevrose transversalis quando este muculo é forte antes de realizar a herniorafia descrita.

ZUSAMMENFASSUNG

Die rassenmässige Prädisposition zur Leistenhernie innerhalb der afrikanischen Bevölkerung, die Grundzüge der funktionellen Anatomie des Leistenkanals, die Entwicklung des Mechanismus der Leistenhernie, die Operationen von Bassini, McVay und Anson und von Lytle, der Entspannungsschnitt von Rienhoff und andere wichtige Fragen werden kurz erörtert.

Innerhalb von fünf Jahren wurden 199 Leistenbrüche an Kranken von vorwiegend afrikanischer Abstammung nach der unmodifizierten Bassini-Rienhoffschen Methode operiert (Markowski), bei denen nur zwei Rückfälle beobachtet wurden.

Es wird ein (von Kopel entwickeltes) Verfahren beschrieben, bei dem nach einem Entspannungsschnitt in der vorderen Rektusscheide entlang der Linie, wo die Aponeurosen des inneren und äusseren schrägen Bauchmuskels in die Linea alba verschmelzen, der Defekt in der hinteren Wand des Leistenkanals mit geringster Spannung geschlossen wird, indem die Aponeurose des inneren Schrägmuskels, *wo sie den seitlichen Rand des Rektus* kreuzt, an das Lig.inguinale angenäht wird. Dies führt zu einer geschmeidigen und zuverlässigen Reparatur. Der Verfasser glaubt, dass auf diese Weise die normale Kontraktionsfähigkeit der Muskelgebilde des Leistenkanals in hohem Masse erhalten wird, da der zwar angenäherte aber doch noch freie fibromuskuläre Rand beweglich geblieben ist. Dies ist wesentlich, wenn man einen zuverlässigen Klappenmechanismus, der einer Ausstülpung durch den inneren Ring entgegen wirkt, und eine elastische Barriere über dem Hiatus in der Bauchwand des Leistenkanals schaffen will. Mit diesem Verfahren wurden 73 Leistenbrüche bei Kranken von vorwiegend afrikanischer Abstammung operiert, und innerhalb von anderthalb Jahren ist bis zur Zeit der Niederschrift dieses Berichts kein Rückfall bekannt geworden.

Ausserdem bediente sich Kopel der folgenden Massnahmen: die Erweiterung des fibrösen inneren Ringes wurde durch Verengung der Öffnung unterhalb des Samenstranges behandelt. Wenn ein starker M.cremaster vorhanden war, so wurde er vor Ausfuhrung der oben beschriebenen Operation als besondere Verstärkung an die transversale Faszie angenäht.

RÉSUMÉ

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Congenital Posterolateral Diaphragmatic Hernia

Pathogenesis and Treatment

VIRUL KAO BORISUTI, M.B.
AND
SMARN MUNTARBHORN, M.B.B.S. (Lond.), F.R.C.S. (Eng.), F.I.C.S.
BANGKOK, THAILAND

In Chulalongkorn Hospital congenital posterolateral diaphragmatic hernia is a rarity, considering the annual rate of 10,000 deliveries in the obstetrics department during the past five years. The 2 infants whose cases are here reported, operated on the age of 6 and 9 days respectively, were brought in from outside, and the success of the operation was a compliment to the exact diagnosis by the radiologist.

A boy and a girl, 6 and 9 days old respectively, with left posterolateral diaphragmatic hernia, were operated on and recovered, with full expansion of the left lung.

In both, dextrocardia and malrotation were the unfailing accompaniments; in the boy, pectus excavatum was also present.

The thoracic approach has the advantage of revealing the condition of the herniated viscera, the lung and the sac if there is one. There was none in the authors' cases.

Diagnostic points included a clinically absent heart murmur, dyspnea, cyanosis, and dextrocardia. Roentgen signs include thoracic intestine, collapse of the lung and dextrocardia.

It is discouraging to read through the writings of many pediatricians and surgeons, for the infants born with this abnormality died early and the operation for correction carried a high mortality rate, partly because of associated anomalies such as hypoplasia of the lung, septal defect, spina bifida, polycystic kidney and, invariably, malrotation of the intestine. Potter[1] stated that only 1 infant born at Chicago Lying-in Hospital lived more than six hours. Bowers, McElin, and Dorsey[2] reported from the Evanston Hospital that 9 of 13 infants born with diaphragmatic hernia died within 2 hours of birth; the remaining 4 were operated on, and only 1 survived. From the Indiana University Medical Center, Moore, Battersby, Roggenkamp and Campbell[3] reported 16 cases of congenital posterolateral diaphragmatic hernia in which the infants were under 90 hours of age. In 13 the condition was diagnosed clinically and in 3 at autopsy. The 13 infants were operated on, and only 8 survived (40 per cent mortality). Campanale and Rowland[4] pointed out the critical association of hypoplasia of the lung with posterolateral diaphragmatic hernia and reported 5 cases, in which all of the infants died. Gross[5] reported a mortality rate of 13 per cent for 82 such hernias.

REPORT OF CASES

CASE 1.—A boy [illegible] days old, one of [illegible] in a family, with a birth weight of 2.75 Kg., was

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Submitted for publication March 28, 1958.

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The Anatomy Lesson of Professor Frederick Ruysch, by Adriaan Backer. This artist was born in Amsterdam in 1643. He was sent to Italy when young and acquired a taste and correctness of design not very common in Dutch artists. An interesting contrast can be made between the Anatomy Lesson of Professor Ruysch and Rembrandt's Anatomy lesson of Professor Tulp reproduced on p. 463 of this issue of the *Journal.* In Rembrandt's picture the demonstrator and the pupils are concentrating on the dissection, which adds greatly to the reality and the beauty of this famous painting: in Backer's picture all are primarily concerned in posing for their portraits. In Backer's painting the beauty of the hands of the Professor and those of all his pupils are especially noticeable. The position of the cadaver is fantastic, but the depiction of the surface anatomy is accurate and masterful. *(Reproduced by Courtesy of the Rijksmuseum, Amsterdam, The Netherlands.)*

—Hamilton Bailey, F.R.C.S. (Eng.), F.A.C.S., F.R.S. (Edin.), F.I.C.S. (Hon.)

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The thoracic approach has the advantage of revealing the condition of the herniated viscera, the lung and the sac if there is one. There was none in the authors' cases.

Diagnostic points included a clinically absent heart murmur, dyspnea, cyanosis, and dextrocardia. Roentgen signs include thoracic intestine, collapse of the lung and dextrocardia.

It is discouraging to read through the writings of many pediatricians and surgeons, for the infants born with this abnormality died early and the operation for correction carried a high mortality rate, partly because of associated anomalies such as hypoplasia of the lung, septal defect, spina bifida, polycystic kidney and, invariably, malrotation of the intestine. Potter[1] stated that only 1 infant born at Chicago Lying-in Hospital lived more than six hours. Bowers, McElin, and Dorsey[2] reported from the Evanston Hospital that 9 of 13 infants born with diaphragmatic hernia died within 2 hours of birth; the remaining 4 were operated on, and only 1 survived. From the Indiana University Medical Center, Moore, Battersby, Roggenkamp and Campbell[3] reported 16 cases of congenital posterolateral diaphragmatic hernia in which the infants were under 90 hours of age. In 13 the condition was diagnosed clinically and in 3 at autopsy. The 13 infants were operated on, and only 8 survived (40 per cent mortality). Campanale and Rowland[4] pointed out the critical association of hypoplasia of the lung with posterolateral diaphragmatic hernia and reported 5 cases, in which all of the infants died. Gross[5] reported a mortality rate of 13 per cent for 82 such hernias.

REPORT OF CASES

CASE 1.—A boy 6 days old, one of [illegible] in a family, with a birth weight of 2.75 Kg., was

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Submitted for publication March 28, 1958.

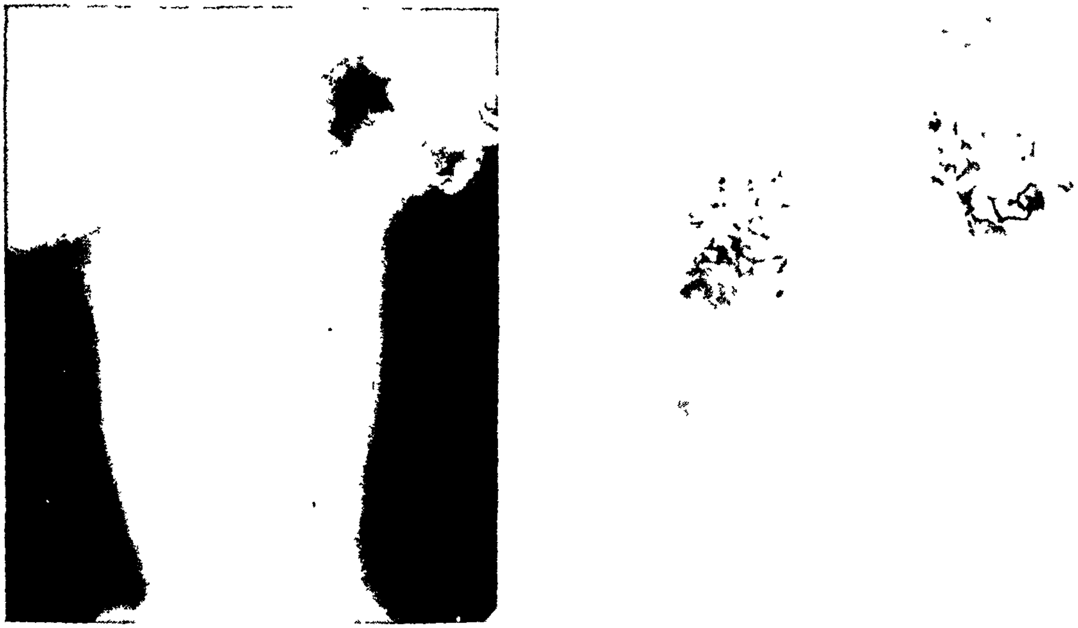

Fig. 1 (*Case 1*).—Plain film (*left*) and film tak [illegible] old,
with dextrocardia. In left pleural cavity were si [illegible] ions
of colon, but neith

brought in with dyspnea, cyanosis and restlessness. The temperature was 37.2 C., th pulse rate 110 and the respiratory rate 4 The white cell count was 14,200 per cubi millimeter of blood. There was pectus e. cavatum, and the abdomen was flat. Roentg study showed collapse of the left lung, d trocardia, the aortic arch on the right the trachea and intrathoracic intestine.

Thoracotomy was [illegible] on the si. day, through the [illegible] when t child had become [illegible] 'c witl respiration rate of [illegible] he lung was collapse [illegible] 'u ileum, cecum-appen transverse colon w The stomach and sp domen, being fixed i

The hernial orifice [illegible] by 3 cm. It [illegible] to the central tendon. [illegible] thoraco. [illegible] of the diaphragmatic [illegible]

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mal. The chest was drained for three days. There was no hernial sac.

The child made an uneventful recovery and was discharged on the seventh day.

Comment.—The appearance of the orifice was similar to that in case 1: oval, 2.5 by 3 cm. and separated from the posterior thoracic wall by a 2 cm. band of diaphragmatic musculature.

Diagnosis.—Bearing in mind the possibility of congenital abnormality in the newborn, one ought to make investigations of the alimentary and respiratory systems if there are signs of difficulty in breathing and swallowing. Indeed, in the absence of congenital heart disease, dyspnea and cyanosis should indicate interference with the lung function, i.e., inexpansibility or collapse.

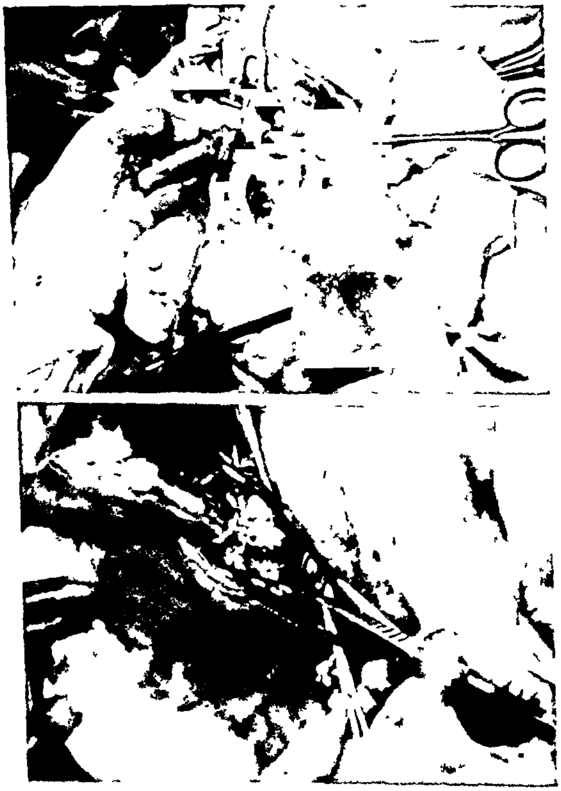

Fig. 2.—*Above,* surgeon's middle finger inserted through incision at periphery of diaphragm and through hernial orifice (thoracic intestine). *Below,* separation of hernial orifice from posterior abdominothoracic wall with band of muscular tissue (pleuroperitoneal fold). Intestine replaced in abdomen.

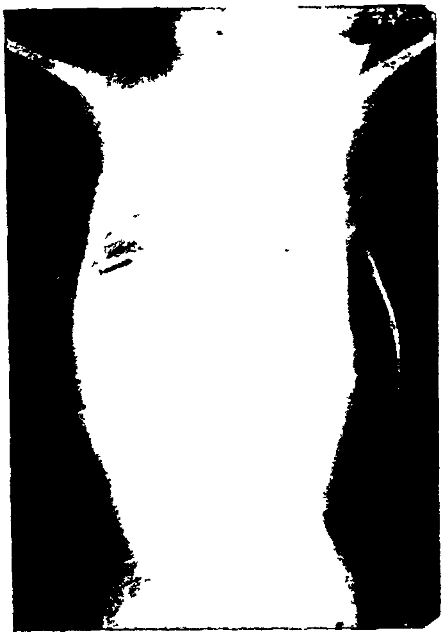

Fig. 3.—Good lung expansion after operation.

Clinically, congenital posterolateral diaphragmatic hernia is diagnosed by the signs of dyspnea, cyanosis and dextrocardia.[4] The heart sounds are best heard on the right side, owing to the mediastinal shift to the right. By listening on the left one may hear the peristaltic sound. Often there are many other associated abnormalities, such as pectus excavatum and a right-sided aorta as in our first case.

Roentgenographic study is an essential adjunct to the exact diagnosis, for the plain film alone will show the collapse of the lung and the mediastinal shift to the right producing secondary dextrocardia.

Coils of intestine are seen on the plain film; in both cases here presented these were beautifully differentiated from cysts and pulmonary abscesses by the presence of barium in them.

Management.—The ideal undertaking is to operate early, in order to put back the structures in their proper locations and allow the lung to expand. Our 2 patients

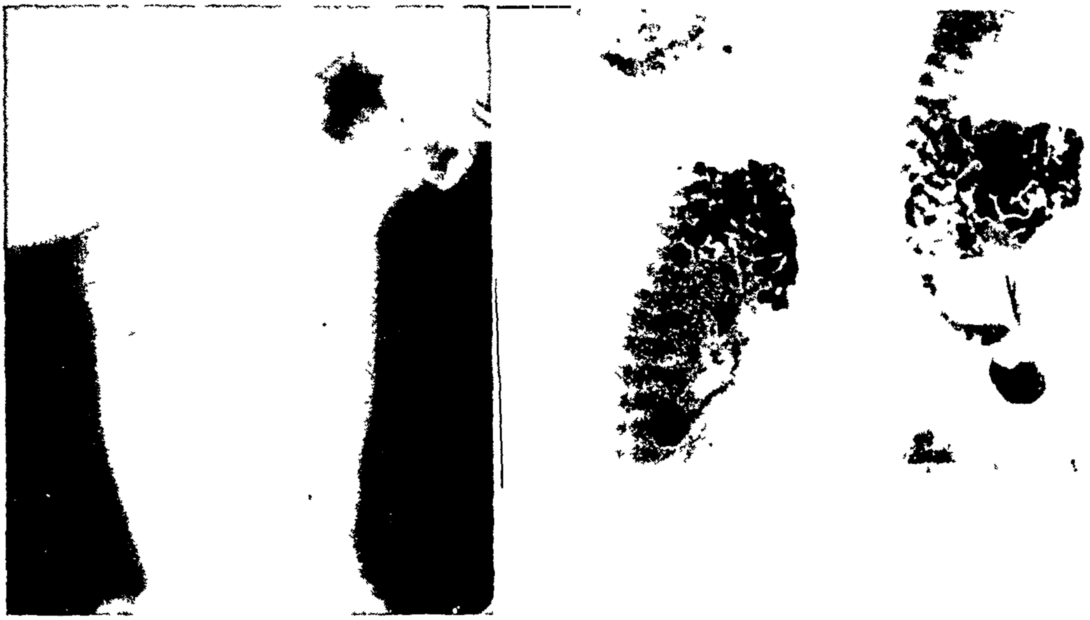

Fig. 1 (*Case 1*).—Plain film (*left*) and film taken after barium meal (*right*) of boy 4 days old, with dextrocardia. In left pleural cavity were small intestine and ascending and transverse portions of colon, but neither spleen nor stomach.

brought in with dyspnea, cyanosis and restlessness. The temperature was 37.2 C., the pulse rate 110 and the respiratory rate 42. The white cell count was 14,200 per cubic millimeter of blood. There was pectus excavatum, and the abdomen was flat. Roentgen study showed collapse of the left lung, dextrocardia, the aortic arch on the right of the trachea and intrathoracic intestine.

Thoracotomy was performed on the sixth day, through the left ninth rib, when the child had become severely cyanotic with a respiration rate of 60 per minute. The left lung was collapsed, and coils of jejunum, ileum, cecum-appendix, ascending colon, and transverse colon were in the pleural cavity. The stomach and spleen remained in the abdomen, being fixed in the normal position.

The hernial orifice was elliptic and measured 2.5 by 3 cm. It was situated on the left of the central tendon, being separated from the posterior thoracoabdominal wall by 2 cm. of the diaphragmatic muscular tissue. An incision (4 cm.) was made along the costal attachment of the diaphragm in order to enter the abdominal cavity, and when the hernial orifice was enlarged toward this incision the herniated contents could be easily replaced into the abdomen. The midgut had obviously not gone through the process of normal rotation. The cut edges of the diaphragm were sutured and the hernial orifice closed with interrupted silk. The phrenic nerve was intact. There was no hernial sac. Drainage was maintained for three days. The child made a good recovery and was discharged thirteen days later.

Case 2.—A girl 8 days old, one of a family of 7, was admitted with a history of 3 days of dyspnea, cyanosis and inability to take food. The temperature was 104 F., the pulse rate 120 and the respiratory rate 30. There was a flat abdomen, and crepitations were present in the left side of the chest. Roentgen study showed intrathoracic intestine, dextrocardia and abdominal stomach.

The child was operated on on the ninth day through the ninth intercostal space. The left lung was collapsed; the heart was displaced to the right, and coils of jejunum, ileum, cecum-appendix, ascending colon, and transverse colon constituted the herniated contents. An incision was made through the costal attachment of the diaphragm and the hernial orifice was enlarged, after which the herniated structures could easily be replaced into their respective locations. The cut edges were sutured, and the orifice was closed with interrupted silk. The phrenic nerve was normal. The chest was drained for three days. There was no hernial sac.

The child made an uneventful recovery and was discharged on the seventh day.

Comment.—The appearance of the orifice was similar to that in case 1: oval, 2.5 by 3 cm. and separated from the posterior thoracic wall by a 2 cm. band of diaphragmatic musculature.

Diagnosis.—Bearing in mind the possibility of congenital abnormality in the newborn, one ought to make investigations of the alimentary and respiratory systems if there are signs of difficulty in breathing and swallowing. Indeed, in the absence of congenital heart disease, dyspnea and cyanosis should indicate interference with the lung function, i.e., inexpansibility or collapse.

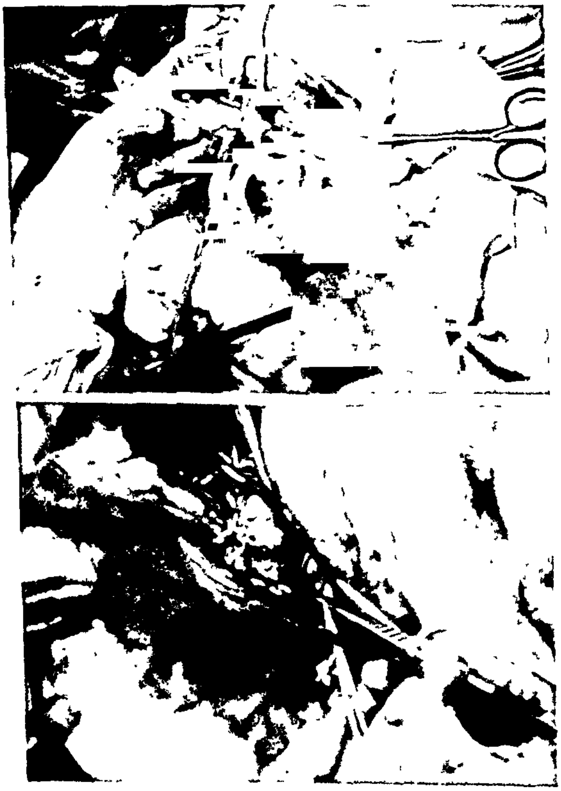

Fig. 2.—*Above*, surgeon's middle finger inserted through incision at periphery of diaphragm and through hernial orifice (thoracic intestine). *Below*, separation of hernial orifice from posterior abdominothoracic wall with band of muscular tissue (pleuroperitoneal fold). Intestine replaced in abdomen.

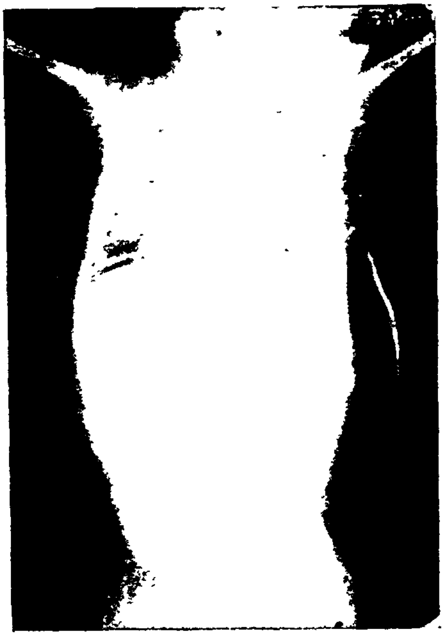

Fig. 3.—Good lung expansion after operation.

Clinically, congenital posterolateral diaphragmatic hernia is diagnosed by the signs of dyspnea, cyanosis and dextrocardia.[4] The heart sounds are best heard on the right side, owing to the mediastinal shift to the right. By listening on the left one may hear the peristaltic sound. Often there are many other associated abnormalities, such as pectus excavatum and a right-sided aorta as in our first case.

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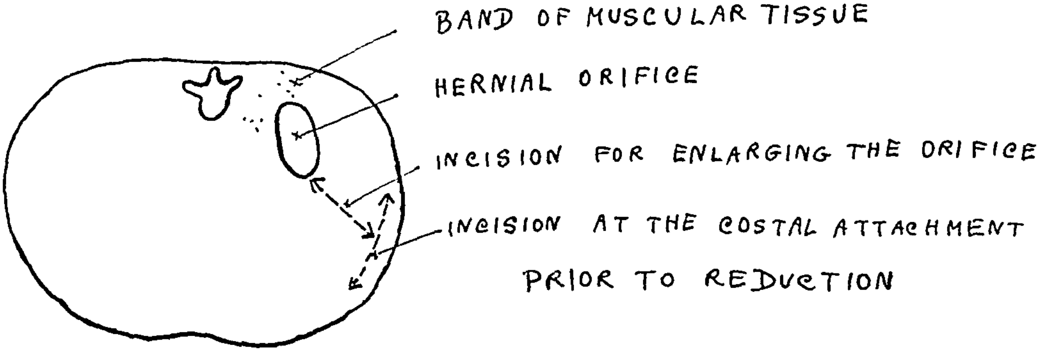
BAND OF MUSCULAR TISSUE
HERNIAL ORIFICE
INCISION FOR ENLARGING THE ORIFICE
INCISION AT THE COSTAL ATTACHMENT
PRIOR TO REDUCTION

Fig. 4.—Upper surface of diaphragm.

must have been very tolerant to anoxia, as they were rather cyanotic at operation on the sixth and the ninth day respectively. The thoracic incision through the ninth interspace has the following advantages over the abdominal:

1. It accomplishes full exposure of the herniated intestine, and one is able to assess the viability thereof before replacement: the condition of the lung is also studied, with a view to mild inflation under direct vision. Displacement of the heart is also observable.

2. Drainage of the pleural space to a tube under water encourages expansion of the lung by virtue of the negative pressure.

Replacement of the herniated structures into the abdomen is easily done if a peripheral incision is made through the costal attachment of the diaphragm and if the orifice is enlarged toward this incision. Incisions of this type are restitched, and the orifice is closed with interrupted silk.

Pathogenesis.—In our 2 cases of posterolateral diaphragmatic hernia, the fol-

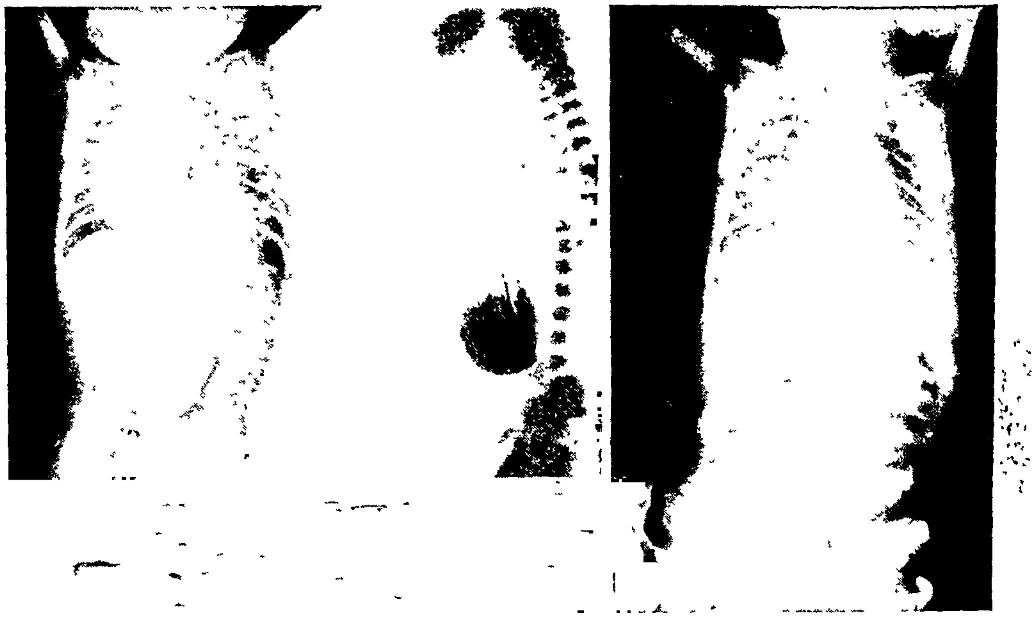

Fig. 5 (*Case 2*).—*Left*, girl 8 days old, with dextrocardia, thoracic intestine and abdominal stomach. *Right*, good lung expansion after operation.

lowing abnormalities were present.

1. The jejunum, the ileum, the ascending colon and the transverse colon were all intrathoracic. The stomach and the spleen remained intact.
2. The hernial orifices were not in contact with the posterior thoracoabdominal wall, being separated therefrom by muscular tissue, 2 to 3 cm. wide, belonging to the posterior costal attachment of the diaphragm. The phrenic nerve was intact. The aforementioned band of muscular tissue represented the ingrowth of the diaphragmatic element derived from the body wall, covered by the serous membrane of the pleuroperitoneal fold. It was responsible for the closure of the posterior half of the pleuroperitoneal canal, the anterior half remaining patent as the hernial orifice.
3. The left lung was not hypoplastic. Companale and Rowland[1] pointed out that in their cases hypoplasia was due to very early herniation through the pleuroperitoneal canal and was regarded as a fatal accompaniment of the hernia. In our 2 cases expansion of the lung was good after the operation, as may be seen from the roentgen appearance, and it is likely that herniation took place late in fetal development. The left lung had developed and was collapsed by the herniation; full expansion was therefore achieved in the postoperative period. The time of onset of herniation is therefore a highly significant factor in determining the prognosis; the later in fetal life herniation occurs, the better the prognosis.

COMMENT

As has been stated, many infants with this condition die within a few hours of birth. The early demise is mostly due to associated abnormalities, notably pulmonary hypoplasia. In cases in which the lung has fully developed, the collapse consequent upon the herniation is a reversible process; this is why our 2 patients survived the six and nine days. Of course, they were rather cyanotic, and there should be a limit to the time taken for the investigations.

RÉSUMÉ

Description de deux cas (garçon âge de 6 jours, fille de 9 jours) de hernie diaphragmatique postérieure latérale gauche avec dextrocardie et rotation, s'accompagnant chez le premier d'un thorax creux. Guérison post-opératoire complète avec capacité d'expansion totale du poumon gauche.

La voie thoracique présente l'avantage de révéler l'état du viscère hernié, du poumon, et du sac s'il y en a un (absence de sac dans les cas de l'auteur).

Symptômes cliniques: absence de bruit cardiaque, dyspnée, cyanose, dextrocardie. Signes radiologiques: intestin intrathoracique, collapsus pulmonaire et dextrocardie.

RIASSUNTO

Vennero operati un bambino e una bambina rispettivamente di sei e di nove anni per un'ernia diaframmatica posterolaterale. Guarirono e si ottenne una completa riespansione del polmone. In entrambi vi era destro-cardia e malrotazione intestinale; nel bambino vi era anche un torace a imbuto.

La via toracica ha il vantaggio di mostrare la situazione dei visceri erniati, del polmone e del sacco (se c'è). Nei due casi presentati non vi era sacco.

I sintomi sono rappresentati dalla dispnea, dalla cianosi, dalla destrocardia e, radiologicamente, dalla presenza di intestino in torace, dal collasso polmonare e dall'abnorme situazione del cuore.

RESUMEN

Un niño y una niña, de 6 y 9 días respectivamente, con hernia diafragmática posterolateral izquierda, fueron opera-

dos, y sanaron con expansión completa del pulmón correspondiente.

Ambos casos iban acompañados de dextrocardia y malrotación; el niño tenía también "pectus excavatum."

La vía quirúrgica tiene la ventaja de permitir la observación de las vísceras herniadas, el corazón y el saco cuando existe. No había saco en ninguno de los dos casos.

Entre los signos diagnósticos se incluyen la falta de murmullo cardiaco, la disnéa, la cianosis y la dextrocardia. Radiológicamente se aprecia intestino torácico, colapso pulmonar y dextrocardia.

SUMÁRIO

Um menino e uma menina de seis e nove anos respectivamente com hernias póstero-laterais diafragmáticas esquerdas foram operados com sucesso, obtendo-se expansão completa do pulmão esquerdo.

Em ambos dextrocardia e má rotação eram acompanhantes infalíveis; o menino também apresentava peito excavado.

O acesso torácico apresenta a vantagem de revelar a condição da víscera herniada, o pulmão e o saco se existir um. Nos casos do autor não havia saco herniãrio.

Pontos diagnósticos: ausencia de sopros cardíacos clínicamente, dispnea, cianose e dextrocardia. Sinais radiográficos incluem intestino torácico, colapso pulmonar e dextrocardia.

ZUSAMMENFASSUNG

Ein Junge und ein Mädchen im Alter von sechs bzw. neun Jahren mit einem linksseitigen posterolateralen Zwerchfellbruch wurden operiert und unter völliger Ausdehung der linken Lunge geheilt.

In beiden Fällen bestand Dextrokardie und anomale Rotation, der Junge wies ausserdem eine Aushöhlung des Brustkorbes auf.

Der thorakale Zugang hat den Vorteil, dass man den Zustand der durchgebrochenen Eingeweide, der Lunge und des Bruchsackes, sofern ein solcher vorhanden ist, beurteilen kann. Die beiden Fälle des Verfassers wiesen keinen Bruchsack auf.

Zu den diagnostischen Merkmalen gehören das Fehlen von Herzgeräuschen und der Nachweis von Atemnot, Zyanose und Dextrokardie. Röntgenologisch werden Darmsegmente im Brustkorb, Lungenkollaps und Dextrokardie gefunden.

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Harvey returned to England thoroughly imbued with the anatomic teachings of Padua and Galileo's deductions on the movements of the heavenly bodies. Two themes were constantly to revolve in his mind in the years to come: anatomy and movement, which would eventually culminate in his great *anatomic animata.* Thereafter he would be completely absorbed by a third idea: the application of his concepts on movement to the blood. Harvey's one goal, then, was to develop an animate anatomy of the blood, an anatomico-physiologic theory on the movement of the blood.

—*Marti-Ibañez*

A New Study of Intestinal Obstruction

With Special Reference to Cases Involving Delayed Treatment

M. S. EMINE, M.D., F.I.C.S.*

TABRIZ, IRAN

The principles of treatment for intestinal obstruction are outlined, with emphasis on the urgent need of good preoperative care, particularly when treatment has been delayed for several days since the onset of symptoms. This care must include all routine precautions, plus any special procedures required in the individual case, since the patient who has delayed treatment is usually in poor condition. Management prior to surgical intervention, therefore, should be governed by the adage "Make haste slowly." Although the operation must be considered an emergency procedure, especially if strangulation is present, adequate preparation by effective modern means remains vitally important.

THE following study is an outgrowth of my work and observations over a considerable period and with hundreds of patients, chiefly in the Bualy Hospital of Tarbiz University, in my native country of Iran. This summary in English of a paper originally written in Persian is offered for the convenience of any who do not know our language and who may be interested in the subject. I have tried to avoid the use of technical terms and have sought to explain the essential steps in diagnosis and treatment that will best serve the needs of the patient.

My surgical experience in various hospitals in Tabriz and elsewhere indicates that acute intestinal obstruction occurs most often among the peasant classes, most of whom usually do not consult a doctor until after the lapse of four or five days from the onset of symptoms, by which time they are in a dehydrated and toxic condition and nearly, if not quite, beyond the power of medical and surgical skill to save their lives. To complicate matters further, sometimes—though they have seen a doctor—the diagnosis has been wrong and a purgative has been prescribed, or the patient has taken a laxative on his own initiative.

The predisposing cause of the condition appears to be a diet consisting of too much bread of a heavy quality, together with excessive use of such liquids as the so-called "dough" (a mixture of yoghurt and water). Other dietary errors also contribute.

Before beginning any treatment, one must first know thoroughly the physiopathologic nature of the condition and the complications that may be encountered. Full advantage should be taken of chemical and biochemical laboratory facilities.

Experience has shown that the mechanical condition of the intestines themselves

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*Professor of Surgery and Dean of the Medical Faculty, Tabriz.

From the University of Tabriz, Bualy Hospital. An English summary of the original study in Persian.

Submitted for publication June 19, 1957.

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ZUSAMMENFAS

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as determined by the history, the symptoms, roentgen study and other examinations, have a direct bearing on arrival at a correct diagnosis. Extraordinary care must be taken to assure complete and meticulous evaluation of every obtainable particle of information, from whatever source, before a decision is made as to operative and other treatment.

Preoperative Care.—Formerly it was my practice, in the type of case aforementioned, (i. e., the case primarily complicated by neglect or mistreatment) to operate immediately, but further experience has shown that better end results can be obtained when all the indicated laboratory, roentgenographic, fluoroscopic and other studies are done first. In any event, the basic items already cited—evacuation of the stomach and duodenum, correction of water balance and treatment of azotemia—must be kept clearly in mind throughout all stages of treatment. Specifically, these may be handled by the use of (a) Wangensteen suction, with either water bottle and siphon or a light pump; (b) parenteral fluids to supply water, dextrose, glucose, sodium chloride and potassium, and (c) parenteral solutions with dextrose to correct azotemia.

Shock is an almost invariable complication in these delayed cases. When this develops before operation can be undertaken, it must be treated separately by the routine method of administration of parenteral fluids, transfused blood and plasma or plasma substitutes, together with inhalation of oxygen and injections of adrenal gland extract or hypertensive drugs.

Peristalsis. Nothing should be given preoperatively to increase peristalsis unless there is a definite diagnosis of paralytic ileus.

Anesthesia. A general anesthesia should be used, special attention being paid to the patient's circulatory status. Preliminary injections of morphine with atropine or scopolamine will facilitate induction. Because of the emergency nature of these cases, all decisions regarding both the anesthetic and the surgical procedure, must be made with the utmost possible speed—*delay may be fatal!*

In my service in the Bualy Hospital during the period from 1948 to 1955, operations were performed on 255 such patients, and the aforementioned principles gave good results. It should be pointed out again, however, that delay was a governing factor in the proportion of deaths, which ranged from 18 to 50 per cent, depending directly upon the interval between the onset of symptoms and admission to the hospital. Among patients who had waited three days or more after the onset, a full 50 per cent died, owing to dehydration and general debility, while of those who sought help within forty-eight to seventy-two hours only 30 per cent failed to survive. Those seen and operated upon within the first twenty-four hours showed a mortality rate of only 7 per cent. The moral is obvious: people must be taught to consult a doctor immediately, if proper treatment is to be instituted and the tragic mortality and morbidity rates associated with this condition are to be reduced.

Postoperative Care.—*Suction:* Gastrointestinal aspiration prevents accumulation of secretions in the intestines, which, in turn, will cause nausea, vomiting and distention. It must be remembered, however, that its use tends to aggravate the water and electrolyte imbalance. Therefore, the amount of aspirated fluid must be measured and equivalent amounts of parenteral fluids administered intravenously to restore this balance. If this is done, suction may safely be maintained for up to five days after the operation.

Fluids and Nutrition: Blood concentration of electrolytes must be kept up to normal by supplying adequate amounts of does not always explain the abnormal systemic state. The bowel may be in relatively good condition; i.e., there may be no gangrene, yet the patient may be moribund or nearly so, or vice versa. According to some observers, the condition may result from any one of four causes:

1. *Infection.* In some quarters it has been theorized that a local infection can result in a septic condition, yet produce no indications of septicemia upon blood culture. Examination of the peritoneal fluid will show no abnormal micro-organisms except in the later stages.

2. *Toxemia.* It has also been held that intestinal toxins enter the blood stream, but my own examination of such bowel secretions shows these to differ but little from normal intestinal secretions.

3. *Shock.* The upper part of the obstructed section of intestine will show a decrease in absorption, while in the lower part absorption is increased. According to this theory, after the obstruction is relieved the liquid flows to the lower part to be absorbed; tests on animals, however, show that such absorption is insufficient to produce a toxic condition. There is also an idea that removal of the obstruction results in a drop in blood pressure.

Anerobic Bacteria. Some are convinced that these also contribute to toxicity.

My own observations, through blood and biochemical studies, tend to indicate that, in general, a change in the amounts of potassium and sodium in the blood and other body fluids disturbs the electrolytic balance, thus causing toxemia and death. In addition, mechanical pressure by the distended intestines upon the neighboring organs upsets the entire physiologic scheme, as indicated by the measure of relief afforded the patient by the mere aspiration of the distending liquids and gas. These two factors together appear to be responsible for the passage of plasma and serum from the blood into the intestines, resulting in changes in the bowel wall and in peristalsis, throwing both absorption and fluid-electrolyte equilibrium out of balance. These changes may be summarized as follows: (a) the internal intestinal pressure is increased; (b) peristalsis first *increases,* in an attempt to overcome the obstruction, then *decreases* and *finally stops entirely;* (c) the intestinal blood vessels first become congested but, later, circulation slows down or stops altogether, apparently owing to a kink in the mesenteric vessels or to pressure from some twist in the mesentery itself; (d) absorption from the intestines becomes variable and usually decreased, and (e) general changes take place in the lungs, liver, heart and kidneys.

This complex of organic and functional deterioration appears to me, after years of observation, to be due to three things:

1. Loss of fluids, causing hemoconcentration.

2. Disturbance of the electrolyte balance (hypercholemia or hypochloremia);

3. Hyperglycemia, azotemia, alkalosis and hyperkalemia.

Treatment, then, should be directed toward removing this aggregation of abnormalities by the following means: (a) correct fluid and electrolyte imbalance by administration of parenteral fluids; (b) administer oxygen to correct anoxemia; (c) combat infection with antibiotics; (d) aspirate the bowel contents to relieve distention, and (e) then — and only then — proceed with the essential operation.

Diagnosis.—As the actual physical elements of intestinal obstruction are familiar to all surgeons, it seems necessary only to point out that, in such delayed cases—and I am convinced that delays resulting from ignorance and superstition are not peculiar to any one race or nation—the time of onset and the point of obstruction,

distention and bradycardia (clearly demonstrable by photometric means). These complications may be averted by the oral or intravenous administration of preparations of potassium, 2 to 6 Gm. of potassium chloride or 4 to 8 Gm. of potassium nitrate usually giving good results.

Other points in postoperative care that must be carefully observed include the methodical administration of antibiotics and the employment of antispasmotic drugs, such as atropine (which also decreases gastric secretion), to counteract intestinal spasm. Sometimes, solution of procainehydrochloride (5 to 10 cc. 0.5 or 1 per cent) may be used to increase the blood pressure. ACTH or adrenal gland extract in small doses, will help to reduce distention. The use of cortisone also gives good results at times; ACTH with cortisone (100 mg. of each), when used with discretion, may be effective. The administration of oxygen helps absorption of nitrogen in the lungs and intestines. Only in cases of extreme need should any drug be given to increase peristalsis; purgatives or enemas are not advisable for two or three days after the operation, and even thereafter an enema is preferable if an aid to evacuation is required. If convalescence is progressing favorably, the patient may be moved with care after the third postoperative day.

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3. Además de las normas generales para el preoperatorio, debe tenerse en cuenta:

que estos enfermos vistos con retraso generalmente están en un estado muy deficiente; *en otras palabras, hay que* "darse prisa despacio."

4. Debe colocarse una sonda de estracción continua durante todo el tiempo que esté el enfermo en el hospital.
5. También deben ponerse en práctica todas las medidas para nivelar el balance acuoso y le electrolitos.
6. Usese anestesia general.
7. Aunque la operación debe considerarse como una urgencia, sobre todo cuando hay extrangulación, antes hay que preparar adecuadamente al enfermo en la forma antes señalada.
8. Es de esperar que se encontrarán métodos cada vez mejores para ayudar al paciente a una rápida y más segura convalecencia.

RIASSUNTO E CONCLUSIONI

Nell'accingersi a curare un'occlusione intestinale, specialmente quando siano trascorsi molti giorni dall'inizio dei sintomi, il chirurgo deve tener presenti i seguenti punti:

1. Una diagnosi corretta è possibile con una anamnesi accurata, con un esame clinico completo e con l'aiuto delle ricerche di laboratorio e radiologiche.
2. Bisogna dare molta importanza allo studio del bilancio idrosalino, che si compie con le note metodiche.
3. La cura preoperatoria comprende tutti i provvedimenti comuni oltre ad alcune cure particolari in conseguenza del fatto che questi malati si trovano abitualmente in pessime condizioni.
4. L'aspirazione intestinale deve essere continuata per tutta la durata delle degenza.
5. Il bilancio idrico ed elettrolitico deve essere ricondotto alla norma con ogni mezzo.
6. Si deve usare l'anestesia generale.
7. L'intervento, in ogni caso, deve essere considerato sotto il profilo dell'urgenza, ma deve essere iniziato solo dopo che il paziente *abbia ricevuto l'opportuna* preparazione.
8. E' sperabile che i progressi della terapia possano migliorare la prognosi di questi malati.

ZUSAMMENFASSUNG UND SCHLUSSFOLGERUNGEN

Bei der Behandlung von Darmverschlüssen muss der Chirurg, besonders wenn seit Einsetzen der Krankheitserscheinungen mehrere Tage verstrichen sind, folgende Punkte im Auge behalten:

1. Zur richtigen Diagnose verhelfen eine sorgfältige Krankheitsgeschichte, körperliche Untersuchung, Laboratoriumsteste und röntgenographische Befunde.
2. Besonderer Wert ist auf eine sorgfältige Abschätzung der Flüssigkeits- und Elektrolytenbilanz auf Grund der Entwicklung der Ergebnisse der Blutzentrifugierung, der Bestimmung der Plasamkonzentration und anderer chemischer Blutuntersuchungen zu legen.
3. Bei der präoperativen Behandlung muss neben allen üblichen Vorsichtsmassnahmen berücksichtigt werden, dass die Opfer eines Aufschubs der Behandlung gewöhnlich in äusserst schlechtem Zustand sind, wenn sie zum ersten Mal untersucht werden, und infolgedessen besondere Massnahmen erfordern; mit anderen Worten, es empfiehlt sich nach dem Motto "Eile mit Weile" vorzugehen.
4. Während der gesamten Dauer des Krankenhausaufenthaltes sollten Absaugeverfahren am Magendarmkanal des Kranken umfangreiche Anwendung finden.
5. Alle verfügbaren Mittel zur Herstellung der Flüssigkeits- und Elektrolytenbilanz sollen benützt werden.
6. Zur Anästhesie soll allgemeine Narkose angewandt werden.
7. Der eigentliche operative Eingriff soll

besonders in Fällen von Darmeinklemmung als eine Notmassnahme angesehen werden, die jedoch nur *nach* zweckmässiger Vorbereitung des Kranken, wie sie oben dargestellt ist, ausgeführt werden soll.

8. Es ist zu hoffen, dass weitere Verbesserungen der Behandlungsmethoden diesen Kranken zu einer sichereren, besseren und schnelleren Wiederherstellung verhelfen werden.

RÉSUMÉ ET CONCLUSIONS

Les points suivants sont à relever dans le traitement de l'obstruction intestinale, surtout lorsque le début des symptômes date de plusieurs jours:

1. Le diagnostic exact peut être posé au moyen d'une anamnèse, précise, de l'examen clinique et radiologique, et de tests de laboratoire.

2. L'équilibre des liquides et des électrolytes doit être étudié attentivement selon l'anamnèse des symptômes, la concentration du plasma ainsi que d'autres études chimiques du sang.

3. Les soins post-opératoires doivent comporter toutes les précautions d'usage, ajoutées à celles nécessitées par le mauvais état général de ces cas traités avec retard, et le précepte "hâte-toi lentement" est ici de mise.

4. Pratiquer des aspirations gastro-intestinales durant tout le séjour du malade en clinique.

5. Prendre toutes les mesures tendant à restaurer l'équilibre des liquides et des électrolytes.

6. Anesthésie générale.

7. L'opération doit être considérée comme urgente, surtout en cas d'étranglement, mais seulement *après* une bonne prération du malade.

8. Il s'agit de rechercher de meilleures méthodes assurant une guérison plus sûre, plus complète et plus rapide de ces cas.

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*References so marked could not be verified

Fatal Hemorrhage from Duodenal Varix

PAUL HWANG, M.D.,[*] EUGENE J. JOERGENSON, M.D.,
PAUL ANSPACH, M.D., AND ALBERT F. BROWN, M.D.[**]

GLENDALE, CALIFORNIA

INTESTINAL varix as a cause of massive hemorrhage is a condition seldom observed or reported, if the term "varix" is restricted to the usual concept of a chronically distended nonangiomatous vein of macroscopic caliber.

The hemangiomatous and telangiectatic lesions of the gastrointestinal tract, as so clearly delineated in the exhaustive review by Gentry and his collaborators[1] do not include "chronic varicosities." If this logical separation is respected, the reported instances of intestinal bleeding varix seem uniformly and truly to represent some other entity, particularly the cavernous hemangioma.

In the case to be described, a lesion was present which appears to correspond both morphologically and in pathogenetic implications to the concept of venous varicosity.

REPORT OF CASE[†]

The patient, a Caucasian housewife aged 50, 5 feet 6 inches (168 cm.) in height and of medium weight, was working and well until the night of March 8, 1952, when she noted a black stool and red staining of the water in the toilet after a bowel movement. This was followed by several similar movements the same night, until she nearly fainted. The next morning she vomited bright red blood several times. There was no abdominal pain except for a slight cramping with the first black bowel movement.

The patient was born in Michigan, married in 1923, and had lived in California since 1930. The past history showed no pregnancies, no gastrointestinal disturbances and no hypertension. The patient used no liquor or tobacco.

About seven years earlier she had had a fall from horseback and was in bed for six months for a broken wrist and deep trauma to the abdomen and thighs, incident to the fall. Prominent veins over the chest, abdomen and thighs were noted after this accident. Further information from the patient's sister indicated that the patient had severe phlebitis of both legs in 1924, following an attack of "pneumonia" from which she nearly died. After this her legs always swelled when she was up and about. She also had repeated attacks of "pneumonia" from 1934 to 1943.

In November 1943, after the horseback accident, phlebitis was said to have developed in the right leg and large, prominent and apparently thrombosed vessels became noticeable over the abdomen. Later, the "thrombi cleared," and the large, tortuous, dilated vessels remained. In 1947 the patient underwent bilateral saphenous ligation.

Appendectomy was performed in 1932. In 1943 there was mild hyperthyroidism, which subsided under medical treatment. The family history was noncontributory.

On admission to the hospital (1:30 p.m., March 9, 1952), the patient appeared pale. The blood pressure in millimeters of mercury was 125 systolic and 50 diastolic; the pulse rate, 24. The heart showed an occasional premature systole and a Grade II apical systolic murmur. The liver was not palpable. There was slight midepigastric tenderness. The abdomen was soft. There was bilateral 2 plus pitting edema of the ankles. The dorsalis pedis pulses were palpable. The thyroid was enlarged and apparently nontoxic. The patient was mentally alert. Roentgen examination of the upper part of the gastrointestinal tract showed irritability of the lower portion of the esophagus, the presence of a small hiatus hernia and spasm of the prepyloric end of the stomach. The red blood cell count was 2,760,000 per cubic milli-

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[*] Formerly resident physician in general surgery, Glendale Sanitarium and Hospital; now at Mojave Hospital and Medical Center, Mojave, California.

[**] From the departments of general surgery and pathology, Glendale Sanitarium and Hospital, Glendale.

[†] C. H. Talmage, M.D., kindly supplied portions of this patient's clinical record.

Submitted for publication April 7, 1953.

meter, with 8.5 Gm. of hemoglobin; the white blood cell count, 5,800, with 88 per cent neutrophils. The diagnosis was massive gastrointestinal hemorrhage of undetermined origin.

The patient was treated conservatively, as in hemorrhagic ulcer management. During the night she had several more loose dark stools. On March 10 the blood pressure was 95 systolic and 60 diastolic and the pulse rate 108. The hemoglobin dropped to 7.3 Gm. per hundred cubic centimeters despite transfusion of 4 pints of blood.

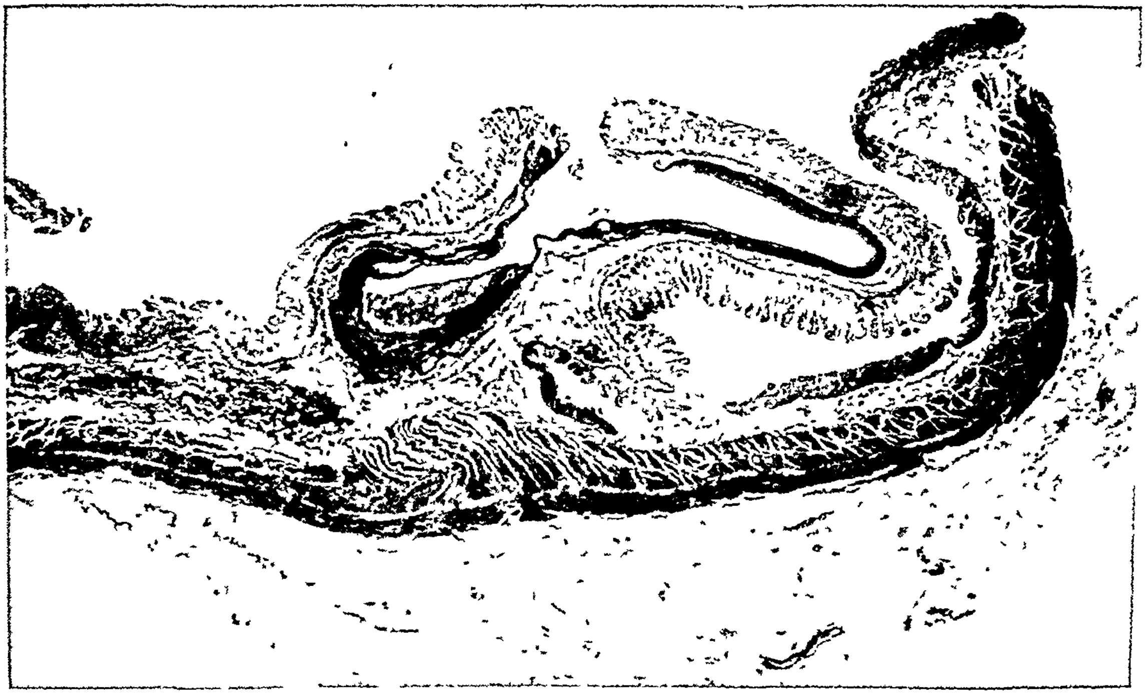
Surgical exploration was done at 10 p.m. on March 10. As the peritoneum was entered, about 4 liters of clear ascitic fluid was obtained. The bowel was not particularly dilated at any portion, but both the large and the small intestine appeared dark bluish, owing to their bloody contents. The stomach was opened through a transverse incision on its anterior surface and the inside thoroughly examined. The cardia was examined for esophageal varices, but none was detectable. The pyloric region was palpated internally as far as the second portion of the duodenum, and no ulcer, induration or fresh blood was found. The small bowel was than palpated beginning at the ligament of Treitz and examined minutely to the cecal junction. No masses, indurations, diverticula or clues of any kind to a possible source of bleeding was noted, except for the presence of a Meckel diverticulum, which was then resected in its entirety and the bowel closed with sutures. The diverticulum appeared normal, with intact mucosa. The colon was then palpated from the cecum to the lower part of the sigmoid. No diverticula, masses or sources of bleeding were identified in this area. The spleen was slightly enlarged. No evidence of portal hypertension was discovered. The abdomen was closed, with the patient in fairly good condition.

Whole blood was given through cannulas at a speed to maintain the blood pressure at the admission level, to a total of 30 pints during the fifty-hour hospitalization. The patient showed no improvement; the diarrhea with bloody stools went on continuously. She died in shock seventy-two hours after the onset of symptoms.

At autopsy, the subcutaneous veins over the chest, the abdomen and both thighs and hips were prominent. The thyroid showed benign nodular goiter. The pericardial sac contained 50 cc. of clear fluid; each pleural sac, [illegible]00 cc. The peritoneal sac contained 3,000 cc. of slightly red, clear fluid. The lungs showed some hypostatic congestion and edema, more pronounced on the left. The heart had a 1.5 mm. fenestration near the free border of the right cusp of the aortic valve, which may have had no functional significance. The coronary arteries showed no atherosclerotic change and the aorta only a slight amount. The right common iliac vein was narrowed and sclerosed, containing a stone-hard core around which there was some canalization. Microscopically it showed a calcified fibrous core consistent with old thrombosis. The right retroperitoneal veins showed extensive varicosity and engorgement, less pronounced on the left. The same was true of the azygos veins and the diaphragmatic tributaries. The veins of the lower portion of the esophagus were only moderately tortuous and congested.

Examination of the digestive system [illegible]

Internal varices, which may occur in any one of many sites, wherever there is a sustained increase in venous pressure from any of several causes, may represent a grave hazard to the surgical patient if not detected. The compression and constriction of anastomotic veins caused by trauma or thrombosis, when associated with familial inherent weakness, for example, leads to varicosity. The development of internal varices is rather difficult to establish. The authors suggest, however, when massive intestinal hemorrhage is associated with probable portal hypertension, external varicose veins, or history of other venous anomaly, the rupture of an intestinal varix should be included in the differential diagnosis. Particularly, when abdominal visceral or parietal varices are encountered during exploration in such a case, the intestine should be carefully searched for a site of possible varicose rupture.



Duodenum showing ruptured submucosal varix. × 10.

showed no ulceration. There was no evidence of incarceration at the potential hiatus hernia. The stomach contained partially digested blood and some food material. The mucosa was intact except for a 1 cm. ecchymotic crevice in a slightly dark red, discolored area in the posterior wall near the middle of the lesser curvature. Microsection of this crevice showed a defect of the mucosa, slight local submucosal hemorrhage and an adjacent, but unruptured, moderately enlarged vein. The small bowel contained dark blood throughout its length. The mucosa appeared normal, had no diverticula and showed no ulceration or staining. Repeated inspection of the duodenum finally brought under attention a 1 mm. aperture in the center of a 6 mm. mucosal elevation at the juncture of the second and third portions. A few tortuous submucosal veins, apparently thrombotic, were observed in the vicinity of this aperture. The colon appeared essentially normal, containing a large quantity of dark, clotted and free blood, moderately staining the colonic mucosa. No diverticula were observed. The operative wound closures of the stomach and the Meckel diverticulum appeared normal for the procedures and showed no evidence of hemorrhage. The liver was not enlarged. Microscopically, it showed moderate loss of lobular markings but no cirrhotic changes. The portal system showed no significant dilation. The pancreatic and bile ducts contained no blood. The spleen, weighing 430 Gm., was slightly pultaceous. The kidneys showed slight congestion The genital organs appeared essentially normal except for a 1 cm. benign endometrial polyp.

Longitudinal microscopic sections through the vascular area noted in the duodenum showed large submucosal saccular thin-walled varicosities. The section through the mucosal elevation and "hole" showed thinning and rupture of the underlying varicosity, perforating the mucosa into the duodenal lumen (see illustration). The edges of the defect showed stretching and thinning of the wall at the vein and small thrombotic deposits. The endothelium extended beyond the frayed edge of the vein wall and was applied to the deep aspect of the mucosa in a manner suggestive of a preliminary state of false "aneurysm" formation preceding the free rupture. An adjacent varicosity contained a small red clot, but for the most part these dilated channels were empty.

COMMENT

Venous varicosities may occur anywhere in the body. Most familiar are those of the legs. Other common sites are the rectum, the spermatic cord and the esophagus. Less common are the broad ligament, the stomach, the urinary bladder, the upper extremity, the veins of the central nervous system and the veins of the intestinal tract. Varices in the last two sites last mentioned are often obscure.

Varicosities may develop in any part where there is a sustained increase in venous pressure due to postural strain or to compression or constriction of anastomotic veins resulting from trauma or thrombosis. Any of these, associated with familial inherent weakness and progressive degeneration of the valves and wall (most internal veins have no valves), through impaired nutrition or inadequacy of supporting tissues, leads to varicosity.

The presence of portal hypertension or anastotomic effects following thrombophlebitis may help in diagnosing the presence of internal varices, but the evidence is by no means certain; establishing the sequence of development of varicosities in these conditions is rather difficult. We may suggest, however, that when massive intestinal hemorrhage is associated with probable portal hypertension, external varicose veins or history of some other venous anomaly, the rupture of an intestinal varix should be included in the differential diagnosis. Particularly when abdominal visceral or parietal varices are encountered during the exploration in such a case, the intestine should be carefully searched for a site of possible varicose rupture. That this is a difficult assignment is illustrated in the case here reported, in which, under direct inspection at autopsy, the vascular defect at first eluded observation. Even in life, the oozing of blood from such a tiny point might escape attention.

SUMARIO

As varicosidades venosas podem surgir em qualquer parte do corpo. As mais comuns são nas pernas, seguindo-se reto, cordão e esofago. São sitios menos comuns ligamento redondo, estomago, bexiga, membro superior, sistema nervoso central e aparelho intestinal. Podem se desenvolver onde existe aumento de pressão venosa por esforço, compressão ou constricção das anastomoses devidos a traumas ou tromboses. Debilidade familiar, degenação progressiva das valvas parietais com desnutrição ou sustentação inadequada dos tecidos moles são fatores que levam ás varicosidades. A presença de hipertensão porta ou efeitos anastomoticos devidos a tromboflebite podem auxiliar o diagnostico de varisesinternas mas sem certesa. Hemorragias intestinais massiças associadas com provavel ripertensão arterial, varises externas ou historia de outras anomalias venosas podem ser incluidas no diagnostico diferencial. Quando as varises abdominais, vicerais ou parietais são encontradas durante o exame o intestino deve ser cuidadosamente pesqui sado como sitio provavel de rutura varicosa. O casa do A. demonstra como é deficil essa precisão porque, nesse caso, pela necropsia a inspecção de transtorno vascular elucidou a observação.

RIASSUNTO

In qualunque parte del corpo possono manifestarsi delle varicosità delle vene; le più comuni sono quelle degli arti inferiori. Altre sedi sono reappresentate dal retto, dal funicolo spermatico e dall'esofago; meno di frequente dal legamento largo, dallo stomaco, dalla vescica urinaria, dall'arto superiore, dal sistema nervoso centrale e dal tubo digerente. Le varici di questi ultimi due distretti sono le più difficili da interpretare.

Le varici si manifestano dovunque esista un aumento della pressione venosa per ragioni posturali, compressione o costrizione delle vene anastomotiche per trauma o trombosi. Ognuna di queste ragioni,

Routine Use of Peri-Colace in Major Surgical Cases

TIMOTHY A. LAMPHIER, M.D., F.A.C.S., F.I.C.S.
AND
FRANK L. LYMAN, M.D.
BOSTON, MASSACHUSETTS

In the authors' experience and that of a number of others, the drug Peri-Colace is an effective agent in restoring the mobility of the intestine and keeping the intestinal contents soft after an operation. A study of its results was made in 50 operative cases, in 90 per cent of which the usual postoperative enemas, which the authors consider not only unnecessary but undesirable, were eliminated. None of the patients complained of griping, cramps, or any other untoward side effect.

WITH the introduction of new drugs, surgical technics and anesthetics, the problem of postoperative intestinal physiology has often been disregarded. The infallible routine in most institutions has been to give an enema on the third postoperative day. For too many patients, the pain and discomfort of an enema remains in their minds long after other unpleasant symptoms connected with the operation have been forgotten. In addition, the administration of an enema is a time-consuming and disagreeable task for nurses and their aides.

The postoperative enema is neither physiologic nor rational. The stomach and intestines are empty of food residue, since the patient's entire gastrointestinal tract was cleaned out prior to the operation. Furthermore, the liquid diet fed postoperatively contains very little residue.

Although it may provoke a defecation, the postoperative enema does little to reestablish normal intestinal motility. Nor does it prevent the formation of fecal impactions, an ever present postoperative hazard that is especially characteristic of the aged. Likewise, an enema, especially if
it contains soapsuds cause irri
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The aims
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1. To overcome intestinal paralysis by reestablishing normal peristalsis.
2. To keep the intestinal contents soft and easily passed, so that straining is minimized.
3. To prevent fecal impaction.
4. To eliminate the use of intestinal irritants that may cause griping and inflammation of the intestinal tract.
5. To make the patient as comfortable as possible after the operation.

Certain etiologic factors in poor postoperative intestinal function are outstand-
g:

Interrupted logic processes
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Submitted for pub

the effect of anesthesia (especially spinal) in producing an atonic colon; (c) the use of morphine and similar drugs, especially the ganglionic blocking agents, and (d) pneumoperitoneum.

2. Change of diet.
3. Restricted fluid intake.
4. Restricted ambulation.
5. Anxiety in the patient, based on (a) fear of rupturing the incision; (b) fear of defecation; (c) fear of enemas, and (d) fear of straining.

Two factors in the reestablishment of normal physiologic function seem important:

(1) The reestablishment of normal motility to the intestine, and (2) maintenance of the softness of the intestinal contents.

A new *"laxating"* agent, Peri-Colace,* was studied to learn whether it would meet the aforementioned criteria and thus eliminate the necessity for the postoperative enema.

Peri-Colace is composed of two active ingredients:

1. Dioctyl sodium sulfosuccinate (Colace).
2. Methanol extracted, purified and standardized glycosides of cascara (Peristim).

The fact that dioctyl sodium sulfosuccinate does prevent the formation of hard, dry stools was first reported by Wilson and Dickinson[1] and later verified by Antos,[2] Turell,[7] Lamphier[4] and others. Dioctyl sodium sulfosuccinate works in two ways: (1) it produces an emulsion between the water and oils present in the fecal stream, and (2) it lowers the surface tension of water in the fecal stream.

Clinically, Rosenfeld and his associates[5] have reported that dioctyl sodium sulfosuccinate is effective in preventing fecal impactions as well as in keeping the stools soft.

The Peristim portion of Peri-Colace is absorbed from the small intestine and exerts its peristaltic stimulating action directly on the large intestine, via the blood stream. Lamphier[4] has previously reported on the efficacy of Peri-Colace as a "laxating" agent.

Lish and Dungan,[6] in animal studies, have reported that Peristim is able to overcome postoperative intestinal stasis and antagonize the propulsion-inhibiting effects of ganglionic blocking agents. In their summary, these authors reported: "The results suggest that, in the human, Peristim would be a reliable peristaltic-stimulant even in cases of hypomotility induced by operative procedures, anticholinergic, antispasmodic, or hypotensive therapy."

On the basis of these animal studies, it seemed reasonable to assume that Peri-Colace would be an excellent agent to reestablish the physiologic intestinal processes after the operation.

Method of Study.—One to 2 capsules of Peri-Colace were administered, on admis-

TABLE 1.—*Postoperative Day of First Bowel Movement*

2d		14
3d		19
4th	No enema	12
4th	After enema	5

TABLE 2.—*Type of Operation Performed*

Appendectomy	15
Hysterectomy	11
Pelvic laparotomy	7
Cholecystectomy	3
Abdominal hernia repair	3
Inguinal hernia repair	3
Cesarean section	2
Miscellaneous	[illegible]
Total	[illegible]

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Although it may provoke a defecation, the postoperative enema does little to reestablish normal intestinal motility. Nor does it prevent the formation of fecal impactions, an ever present postoperative hazard that is especially characteristic of the aged. Likewise, an enema, especially if it contains soapsuds, may cause irritation of the bowel. Unless physiologic solution of sodium chloride is used, there is always a possibility of water intoxication.

The aims of reestablishing function of the bowel should be:

1. To overcome intestinal paralysis by reestablishing normal peristalsis.
2. To keep the intestinal contents soft and easily passed, so that straining is minimized.
3. To prevent fecal impaction.
4. To eliminate the use of intestinal irritants that may cause griping and inflammation of the intestinal tract.
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Certain etiologic factors in poor postoperative intestinal function are outstanding:

1. Interrupted physiologic processes due to:
   (a) handling and manipulation of the bowel during the operation; (b)

Submitted for publication Sept. 3, 1958.

the effect of anesthesia (especially spinal) in producing an atonic colon; (c) the use of morphine and similar drugs, especially the ganglionic blocking agents, and (d) pneumoperitoneum.

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Total	[illegible]

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*[illegible]

sion to the hospital, to each of 50 general surgical patients selected at random. Since Peri-Colace has proved itself gentle and without side effects in the hands of the investigators, the medication was started on the night of admission (elective surgical procedures). In cases of emergency surgical intervention the medication was instituted on the first postoperative day. It was continued until the initial postoperative bowel movement was passed.

Results.—Forty-five patients, or 90 per cent of those studied, had a satisfactory bowel movement on or before the fourth postoperative day, thus eliminating the necessity of an enema. These results are presented in Table 1. To 5 patients, or 10 per cent, an enema was given on the fourth postoperative day in order to produce an evacuation. It is worthy of note that all of these patients (50) reported that the first bowel movement was soft and easily passed. No side effects, such as griping and cramps, were mentioned. The types of operation performed on these patients are listed in Table 2.

COMMENT

It seems reasonable to assume that the work of Lish and Dungan[6] on animals, showing that Peristim overcomes postoperative intestinal stasis, may be transferred to man. One of the problems encountered in conducting this study was the difficulty of convincing nurses that enemas were not necessary when the patient had a normal bowel movement. A number of the patients were given enemas in spite of the fact that they had already had a satisfactory bowel movement. Although Peri-Colace is apparently effective in eliminating the need for the postoperative enema, some reeducation may be necessary among the nurses to establish the postoperative use of this drug.

In 5 cases in which the treatment failed, the patients were women. Three of these patients (oophorectomy and abdominal hernia, cystocele and rectocele, and bilateral sympathectomy) stated that they had a great fear of straining and thus avoided spontaneous defecation.

ZUSAMMENFASSUNG

Peri-Colace ist ein wirksames Mittel, eine normale postoperative motorische Funktion des Darmes wiederherzustellen und den Darminhalt weich zu halten. Bei 50 Fällen, an denen das Mittel angewandt wurde, liessen sich 90 Prozent der postoperativen Einläufe vermeiden.

RESUMEN

El Peri-Colace es un agente efectivo para restablecer la movilidad intestinal normal y la consistencia blanda de las heces en el postoperatorio. Con el uso de este medicamento en cincuanta casos fué posible prescindir del enema en el 90% de las veces.

SUMARIO

O Peri-Colace e um agente efetivo de restauração da motricidade intestinal posoperatoria com manutenção do amolecimento do conteudo intestinal. O uso desse medicamento em 50 casos permitiu a eliminação de 90% dos enemas pos-operatorios.

RIASSUNTO

Viene presentata una serie di 84 casi di Malattia di De Quervain. Il 99% di questi malati fu curato chirurgicamente con successo. I metodi conservativi debbono essere proscritti perchè prolungano l'invalidità e la perdita di giornate lavorative. Anche l'iniezione locale di cortisone non ha alcuna efficacia.

La causa della malattia è sconosciuta; certamente è in rapporto con il lavoro manuale.

Viene descitta la tecnica dell'intervento usato nella cura di questa malattia.

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John Wesley's *Primitive Physick, or an Easy and Natural Method of Curing Most Diseases*, provides some entertaining reading. The father of Methodism accuses the doctors of keeping the bulk of mankind at a distance, so that they could not pry into the mysteries of the profession, by filling "their writings with abundance of technical terms, utterly unintelligible to plain men." He thought this was done for the sake of gain and, to remedy the situation, set down a long list of "cheap, safe and easy medicines: easy to be known, easy to be procured and easy to be applied by plain unlettered men." We read that "fasting spittle outwardly applied every Morning, has sometimes relieved, and sometimes cured Blindness, Corns, Deafness and Warts," and that the best treatment for a cancer in the breast is to take a cold bath. "This has cured many," he writes. "This cured Mrs. Bates of Leicestershire, of a Cancer in her Breast, a Consumption, a Sciatica, and Rheumatism, which she had near twenty Years.—She bathed daily for a month, and drank only water."

[Stephen] Hales's excursions into the realms of medicine, while less entertaining and diverting, had more solid and enduring worth. The critical physician, after he has been entertained by the books of Berkeley and Wesley, quite naturally wonders whether their philosophy and theology is as absurd as their science. On the other hand, when he reads Hales's scientific papers, he is charmed by the author's logical mind and his innate modesty and is filled with curisity to know whether the same clarity of vision permeates his theology.

—*Major*

Genitourinary Surgery

Renal Colic Secondary to Traumatic Avulsion of the Psoas Muscle

Report of a Case

CHARLES PIERRE MATHÉ, M.D., F.A.C.S., F.I.C.S.
SAN FRANCISCO, CALIFORNIA

A report is presented of a patient with renal colic and intractable pain in the lower part of the back, the pelvis and the thigh, due to avulsion of the psoas muscle. The fibrosis in and around the avulsed psoas muscle (which occurred after injury three years earlier) displaced and compressed the ureter, causing attacks of renal colic. It also involved the genitocrural nerve, resulting in intractable pain in the area supplied by this nerve. Precise information obtained by complete urologic examination—cystoscopic, retrograde pyelographic and excretory urographic studies and perirenal air insufflation —led to the diagnosis. Relief was obtained by ureterolysis and freeing of the genitocrural and femoral nerves.

THE case to be reported is a rare instance of avulsion of the psoas muscle without fracture of the transverse processes of the lumbar vertebrae.

Because of intractable disabling pain in the left kidney, inguinal region, testicle and thigh, Mr. J. H., aged 45, was referred by Dr. Russell D. Jaekle for urologic examination. The precise information obtained from retrograde pyelographic and excretory urographic studies and from retroperitoneal air insufflation led to the diagnosis of a sclerotic avulsed psoas muscle.

The patient's past history revealed "fracture of bones of the neck and upper and lower back" in 1948, for which he had been treated for two years without further complication. In 1950 he had a "stroke" and, later, caisson disease while working as a diver.

In 1955, while he was a construction worker on the San Rafael-Richmond Bridge, he fell 60 feet from the bridge, striking the right gluteal region and back on a concrete abutment, then tumbled into the Bay. He swam out and pulled himself up onto a pier. The injury was "hindquarter fracture"—relatively uncommon and severe. Roentgenograms revealed a fracture line through the region of the right sacroiliac joint posteriorly, and through both rami of the pubis anteriorly on the right. The right lower extremity and pelvis were displaced upward about 4 cm. The right fifth lumbar transverse process was sheared off by this displacement. Owing to inadequate traction, the patient retained about 2 cm. displacement. Complete bone union failed, partly because of wide spreading of the symphysis pubis. On June 28, 1956, sacroiliac fusion (Campbell) was carried out, which stabilized the pelvis so that the patient could walk quite well. He returned to heavy construction work for about five months but was advised to discontinue it because of residual disability factors.

Four months after the fusion operation he

From the Department of Urology, St. Mary's Hospital, San Francisco.

Read at a Western Regional Meeting of the United States Section of the International College of Surgeons, August 21, 1958.

had an attack of left renal colic, which cleared in twenty-four hours; then followed two more similar attacks. In January 1958 he complained of colicky pain in the left loin and constant pain in the lower part of the back, the inguinal region and the mid-lower part of the pelvis, radiating down the lower extremity. The pain was exacerbated when he stood for any length of time, walked, or undertook undue exertion. At times it became so severe that he almost lost consciousness. This was partially relieved if he reclined on the left side. A few days prior to admission to the hospital he noticed hematuria and passed blood clots.

On Feb. 12, 1958, he entered St. Mary's Hospital. Examination of the genitourinary tract revealed a palpable, enlarged, tender left kidney. On deep pressure a swollen sensitive area was noted in the abdomen, at the site of the psoas muscle. The left inguinal region also was tender; the testicles were normal. Urinalysis showed a specific gravity of 1.006. The reaction of the urine was alkaline. Albumen and sugar were absent. There were 8 to 10 leukocytes per high dry field. The blood contained 4,280,000 erythrocytes and 11,200 leukocytes per cubic millimeter; the hemoglobin level was 13 Gm.

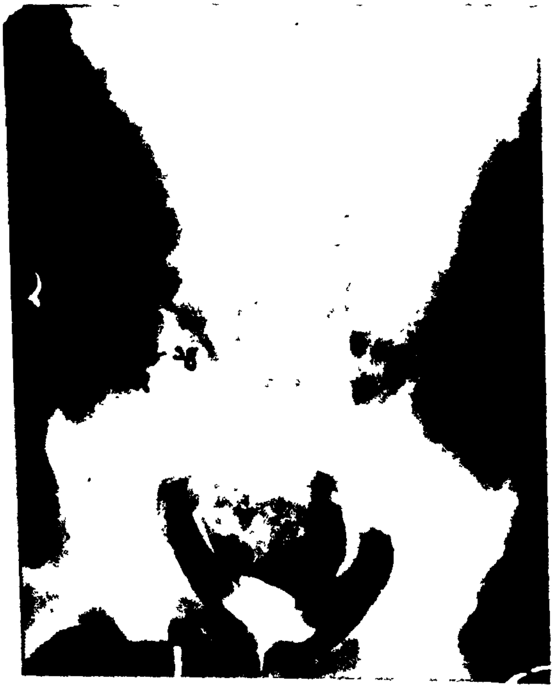

Fig. 1.—Retrograde ureteropyelogram taken with patient in Trendelenburg position. Note oblong shadow cast by avulsed left psoas muscle and depression and displacement of ureter toward midline, giving rise to pyelectasis. Normal ureter and pelvis on right side.

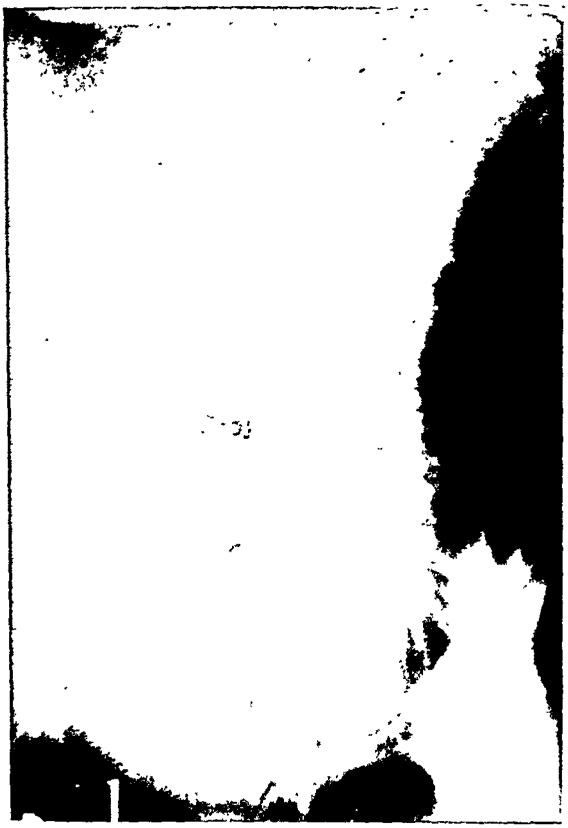

Fig. 2.—Cystogram showing upper displacement of the bladder and right side of body. Note good result of sacroiliac fusion performed three years earlier.

Retrograde Pyelographic Study.—Flat films revealed an oblong mass about 3 by 6 cm. at the site of the left psoas muscle (Fig. 1). When the left ureter was catheterized, urine flowed in a continuous stream indicating obstruction below the renal pelvis. Incidentally, the pain in the kidney was relieved by catheterization, but the pain in the groin, pelvis and thigh persisted. The mass displaced the lower part of the left ureter toward the midline and caused pyelectasis. It was also exerting pressure on the genitocrural and femoral nerves, causing severe pain in the left inguinal region, testicle and thigh. Cystographic study (Fig. 2) revealed distortion of the bladder, the right half being displaced upward with

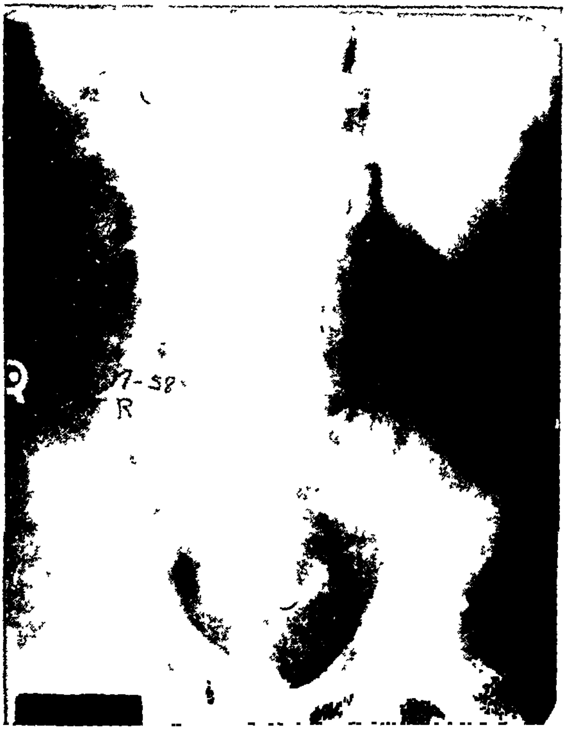

Fig. 3.—Film taken after perirenal air insufflation. Note that no air entered right retroperitoneal space, owing to fibrosis resulting from trauma. Bulging avulsed left psoas muscle and kidney are clearly outlined.

the right side of the body. Both kidneys were fairly well fixed, indicating perinephritis. Indigo carmine appeared in good concentration (Fig. 3) in four minutes in urine from both kidneys (right pelvic capacity 9 cc., left 12 cc.). During perirenal air insufflation no air entered the right retroperitoneal space, because of fibrosis resulting from the healing of a pelvic fracture. The left kidney was visualized and the bulging psoas muscle clearly outlined. Excretory urographic study revealed enlargement of the left kidney and avulsion of the left psoas muscle.

Because of the possibility of injury to the spleen, liver or other organs, operation by the transperitoneal surgical approach was performed by the general surgeon, Dr. Thad J. Whalen. The spleen revealed evidence of former trauma, and the gallbladder contained calculi. There was a retroperitoneal mass on the left side, arising from the promontory of the sacrum, corresponding to the psoas muscle. The peritoneal reflection over the colon on the left side was incised, which exposed the retroperitoneal space. The kidney was in normal position, but the ureter was displaced to the midline and encased in a large mass of fibrosed, avulsed iliopsoas muscle (Fig. 4), from which it was freed. The genitocrural and femoral nerves, also encased in this mass, were liberated. No tumor was encountered. A lymph node was removed for biopsy and revealed hyperplasia with no evidence of tumor.

The patient made an uneventful recovery and left the hospital on March 9, 1956. Since that time he has been free of pain and able to work.

COMMENT

Traumatic avulsion or rupture of the psoas muscle represents a relatively small portion of all injuries to organs of movement. Its occurrence, however, is not so rare as the literature would lead one to believe. At St. Mary's Hospital 3 cases were recorded between 1952 and 1958. Orthopedists agree that indirect violent injury, sufficient to cause avulsion of the

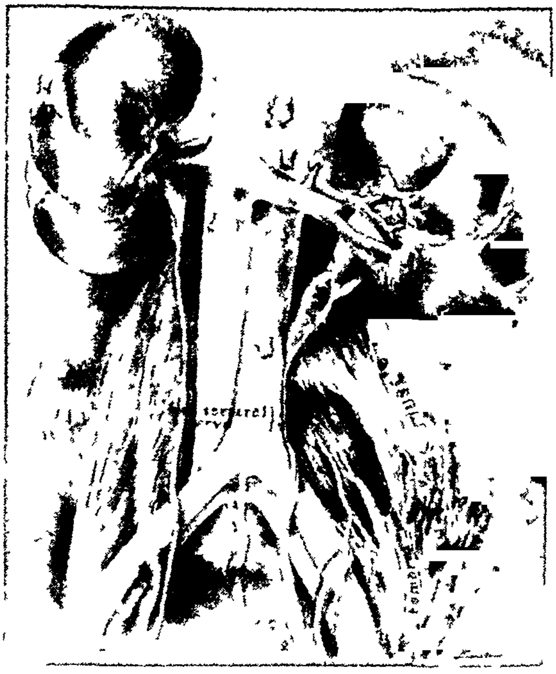

Fig. 4.—Drawing showing avulsion of left psoas muscle, compression and medial displacement of ureter and pressure on genitocrural nerve. Note residual upward displacement of right pelvis and kidney due to previous injury.

psoas, usually fractures the transverse processes of the lumbar vertebrae.

The first instance of rupture of the psoas muscle was chronicled by Galen, who observed it in a Roman gladiator. In 1942 Strandell collected 10 cases from the literature and added 3 of his own, making a total of 13. In 1952 Gaston and Wigglesworth reported an additional case and clarified the clinical symptoms, pain in the hip and lower part of the back (usually due to rupture of nerve fibers). These may disappear within a few hours. Several days later, however, as the hematoma becomes enlarged, it causes irritation of the lumbar plexus, the genitocrural, femoral and obturator nerves, giving rise to paresthesia and analgesia as well as muscle atrophy. Abdominal symptoms due to pressure on the parietal peritoneum by the hematomatous psoas muscle may cause tenderness and muscle spasm simulating appendicitis, diverticulitis, etc. General symptoms consist of fever and leukocytosis and are due to reabsorption of damaged muscle tissue and extravasated blood.

Injury to the psoas muscle may be serious, as there may be secondary hemorrhage as well as damage to the lumbar sympathetic nerves. Fibrosis, which accompanies healing, may exert extrinsic pressure on or displacement of the ureter, causing back pressure and hydronephrosis of the kidney, as was noted in the case here reported. Also, the genitocrural nerve, which forms in the psoas muscle, may be encased in the fibrotic process and cause intractable pain.

After violent injury, avulsion or rupture of the psoas muscle may be suspected by the characteristic clinical symptoms—pain and analgesia in the lower part of the back, the pelvis, the groin and the thigh. When the ureter is involved there may be pain in the affected kidney. A good roentgenogram will reveal swelling and bulging of the psoas muscle. Preliminary catharsis will assure better films. Retroperitoneal air insufflation clarifies the outline of the distorted psoas muscle. Retrograde and intravenous urographic studies are invaluable in visualizing the course of an obstructed ureter.

Perusal of the literature reveals no other instance in which the psoas muscle was avulsed in this particular manner—with no fracture of the transverse processes of the lumbar vertebrae. In this instance avulsion was not suspected and would not have been diagnosed except for the precise information obtained by urologic investigation. The collaboration of the orthopedist, urologist and general surgeon were of the utmost importance in the proper diagnosis and treatment and in the final relief of this patient.

ZUSAMMENFASSUNG

Es wird über einen Patienten berichtet, der infolge eines Abrisses des Psoasmuskels unter Nierenkoliken und unbeeinflussbaren Schmerzen in der unteren Hälfte des Rückens, im Becken und im Oberschenkel litt. Die fibrösen Veränderungen innerhalb und in der Umgebung des abgerissenen Psoas, die nach einer drei Jahre vorher erfolgten Verletzung auftraten, führten zu einer Verlagerung und Zusammendrückung des Harnleiters und zu Anfällen von Nierenkoliken. Die Fibrose schloss auch den N.genitofemoralis ein, was zu den unbeeinflussbaren Schmerzen im Ausbreitungsgebiet des Nerven führte. Die durch eine umfassende urologische Untersuchung (Zystoskopie, retrograde und exkretorische Urographie und perirenale Lufteinblasung) gewonnenen Befunde führten zur Diagnose. Heilung erfolgte durch Loslösung des Harnleiters und des N.genitofemoralis und des N.femoralis.

RESUMEN

Se presenta el caso de un enfermo con cólicos renales y con dolores intratables en la región sacra, pelvis y muslos, debidos a

un desgarro del psoas. Una reacción fibrosa en el lugar del desgarro y a su alrrededor (a los 3 años del trauma que originó la rotura), desplazaba y comprimía el uréter, y daba lugar a los cólicos renales. También afectaba al nervio genitocrural, ocasionando dolores en su área tributárea.

Se llegó al diagnóstico tras una exploración urológica completa—cistocopia, pielografías ascendente y descendente y radiografías. Una liberación de las adherencias que comprimían los nervios femoral y genitocrural y una ureterolisis hicieron cesar los dolores.

RÉSUMÉ

L'auteur rapporte un cas de coliques rénales avec douleurs lombaires rebelles, douleurs au niveau du pelvis et de la cuisse, dues à l'avulsion du muscle grand psoas à la suite d'un accident datant de trois ans. La fibrose s'étant développée à l'intérieur et autour du muscle avait provoqué le déplacement et la compression de l'uretère, avec atteinte du nerf génitocrural. Le diagnostic a été posé grâce à un examen urologique complet (cystoscopie, pyélographie rétrograde, urographie descendante, insufflation périrénale d'air). Guérison par urétérolyse et libération du nerf génitocrural et du nerf fémoral.

RIASSUNTO

Viene riferito il caso di un malato che soffriva di dolori colici violenti e resistenti alle cure, localizzati alla regione sacrale, alla pelvi a all'anca, consecutivi all'asportazione del muscolo psoas che era avvenuta tre anni prima in conseguenza di un trauma. La fibrosi cicatriziale nella sede del *muscolo asportato spostava e comprimeva* l'uretere causando queste coliche di tipo renale, e interessava anche il nervo genitocrurale causando un dolore intollerabile nella regione innervata da tale nervo. La diagnosi fu formulata soltanto dopo un completo esame urologico del paziente (cistoscopia, pielografia ascendente, urografia e pneumorene), e la guarigione si ottenne dopo l'ureterolisi e la liberazione del nervo genitocrurale e femorale.

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The greatest art is in the concealment of art, and I may say that we of the medical profession excel in this respect.

Medicine is a science of uncertainty and an art of probability.

Absolute diagnoses are unsafe. and are made at the expense of the conscience.

—*Osler*

Nephropexy; An Evaluation

ROGER W. BARNES, M.D., F.A.C.S., F.I.C.S.,
AND
THOMAS A. HORSLEY, M.D.
LOS ANGELES, CALIFORNIA

A CAUTIOUS approach to nephropexy is essential if satisfactory postoperative results are to be obtained. A careful and sometimes prolonged and repeated analysis of symptoms and urographic abnormalities should be made before this operation is performed.

Review of the literature of the past ten years on the subject of nephroptosis and nephropexy reveals a remarkable uniformity of opinion as to the symptom potential of ptosis of the kidney and the virtue of nephropexy in curing the symptoms. While the writers go to some pains to emphasize that ptosis *per se* is not an indication for surgical treatment, they nevertheless are equally emphatic in stating that ptosis can cause urinary obstruction with resultant pain, pyelectasis and infection; gastrointestinal symptoms due to pull on the celiac axis, the duodenum or the colon, and intolerable nervousness as a separate and distinct symptom. In such cases nephropexy is considered indicated. In 1952 Burford, Gleen and Burford reported an astounding 93 per cent cure of symptoms in a large series of 304 cases in which nephropexy was performed, out of 711 cases of nephroptosis studied. In more than half of these, however, there were obstructive lesions other than the ptosis itself, so that the nephropexy must be considered an incidental rather than a primary procedure. They feel that persistence of pain, hematuria, hydronephrosis, infection, or diminishing phenolsulfthalein excretion, singly or in combination, constitutes indications for nephropexy, and this view is largely supported by other writers.

Pointing out that their experience of twenty-six years of treating nephroptosis indicates that no particular signs or symptoms form a dependable basis for predicting the results of nephropexy, the authors emphasize the fact that this operation is one to be approached with the utmost caution. When mature and honest appraisal have established the indications as far as is humanly possible, however, nephropexy is not only justified but helpful. Of 88 patients with troublesome to severe distress it enabled the authors to relieve 29 entirely and to bring about significant improvement in 18. The results of their study of this procedure and its results are tabulated.

The sole serious dissenters, at least in print, would seem to be Braasch and his co-workers, who agree that, when ptosis causes such symptoms, nephropexy should be done, but raise the question "how can one know with certainty when the ptosis is causative and when it is merely coincidental?" Of 230 patients with nephroptosis they referred only 21 for nephropexy and had the discouraging experience of

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Read at the Twenty-[illegible] Congress of the United States [illegible] International College of Surgeons, Los Angeles, March [illegible].

From the Department of Surgery [illegible] College of Medical Evangelists, Los Angeles.

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curing only 3, while 8 more were improved. They emphasized the great difficulty of determining the role of the ptosis itself with any degree of accuracy.

Burford and his co-workers stated that persistence of symptoms in patients who have had nonsurgical treatment is an indication for nephropexy, but this is obviously no advance in determining the part played by the ptosis. In Dodson's opinion, pyelectasis in a case of ptosis incriminates the ptosis *per se.* He pointed out also the high incidence of renal disease associated with ptosis, and objected to Braasch's elimination of complicated cases of ptosis, which gives his figures a distorted bias against nephropexy. Hess and his co-workers consider the old sign of pain when up and relief when down still the most significant symptom indicating nephropexy. Jones and Price noted that there were only 4 unsatisfactory results in 26 cases; the 4 patients failed to get relief of their pain by assuming the Trendelenburg position. Ritter and Begnes find reproduction of the pain by distention of the renal pelvis a good index of the success to be anticipated from operation. An interesting difference in point of view is evidenced by the argument on one hand that failure of a kidney corset to relieve the symptoms makes operation necessary, and on the other hand that if a kidney corset does relieve the symptoms one has a good reason for suspending the kidney, thus obviating the necessity for using the belt.

Case Analyses. — The difficulty, however, is that none of the criteria just enumerated may be of any help in the individual case. We have found pyelectasis relieved by nephropexy, while symptoms persist. In the cases of 2 women we recorded our opinion that nephropexy would be of no help, because of the absence of any demonstrable pyelectasis, but when they insisted on having the operation and assumed all responsibility for poor results from it, both were completely relieved after nephropexy. This apparent absence of correlation of symptoms and signs with surgical results stimulated our search for some prognostic factors in patients with ptosic kidneys and a symptom complex.

In an effort to correlate preoperative symptoms and signs with postoperative results we have compiled data from case records in our private patient file and in the file of the White Memorial Clinic of all patients on whom nephropexy was performed from 1932 to June 30, 1957 inclusive (twenty-five years). There were 188 such patients. Sixty-nine of these were eliminated from the study because a follow-up of more than six months could not be obtained. Of the 119 remaining cases, nephropexy was done as a primary procedure in 88 and combined with another operation in 31 (Table 1). When ureterolysis and/or renal sympathectomy were done, the procedure was an integral part of the nephropexy; in the tabulation of results these are considered one operation and are included with nephropexy done as a primary procedure. Patients on whom pyeloureteroplasty, pyelolithotomy or nephrolithotomy was performed are evaluated separately from those who underwent primary nephropexy.

Method of Estimating Results.—The results as tabulated here are mainly symptomatic results. They were obtained either by interview with the patient or by follow-up report by mail, and the data were compiled from the answers the patients gave. The following list of the questions and a tabulation of the answers includes patients who underwent other major surgical procedures on the kidney in addition to nephropexy.

1. What results have you had from the operation? (Check one.) Well. Improved. Same. Worse.

2. Do you now have any of the symptoms

which were to be cured by the operation? Yes. No.

3. If you still have these symptoms are they worse, the same, or less, than before the operation?

4. Do you have any trouble that you attribute to the operation? Yes. No.

5. Do you have other trouble with your kidneys or bladder that is not related to the operation? Yes. No.

Results as shown by urographic data were good in all cases of primary nephropexy in which urograms were taken postoperatively. It is well known, however, that many patients continue to have symptoms even though the urogram shows the kidney to be in good position. A normal or high position of the kidney as shown by urograms, therefore, is not necessarily an indication that the results of the nephropexy are good.

Comparison of Clinic or Ward Patients with Private Patients.—The results obtained from nephropexy performed on clinic or ward patients were poorer than those for private patients (Table 2). The former were studied, appraised and operated on by numerous attending men and residents, while the latter were managed by our group in our private office.

Correlation of Preoperative Symptoms with Postoperative Results. — Thirty-six patients with pain in the involved side received no help from nephropexy, while 40 were improved or cured (Table 3). Of patients who noted increase of their pain in the *erect position*, 18 were benefited and 13 were not. Relief of pain obtained by lying down was evenly distributed between the two groups; and the number of patients (7) who were helped by use of a kidney belt was not statistically significant. We question the renogastric reflex or nervousness as prognostic aids, since only 11 patients with such complaints were benefited as against 9 who were not. The association of such urinary complaints as frequency of voiding, dysuria, hematuria, urgency, etc., was not significant.

TABLE 1.—*Material for Report*

Total number of nephropexies reported	119
Nephropexy as primary procedure	88
Nephropexy combined with another procedure	31

TABLE 2.—*Private and Clinic Patients: Comparison of Results*

	Private	*Clinic*
Number of primary nephropexies	60	28
Patients cured	24 (40%)	5 (18%)
Patients improved	16 (26.7%)	2 (7%)
Condition same	19 (31.7%)	20 (71.4%)
Condition worse	1 (1.6%)	1 (3.6%)

TABLE 3.—*Correlation of Symptoms Generally Considered Indication for Nephropexy: Results*

	Cured	*Improved*	*Same*
Pain on ptotic side	24	16	34
Pain increased by standing or exercise	14	4	13
Pain increased by lying down	4	2	6
Nervousness; gastrointestinal symptoms; fatigue	7	4	9
Urinary symptoms (dysuria, pyuria, hematuria)	19	15	31

Correlation of Preoperative Urographic Data with Results from Nephropexy.—*Dilatation of the Renal Pelvis:* Some urologists maintain that nephropexy is never indicated unless there is dilatation of the renal pelvis, demonstrable urographically. They contend that nephroptosis without obstruction to the outflow of urine does not produce pain. Others are convinced that *tension or drag* on the renal pelvis by a ptosed kidney causes pain and that obstruction to the outflow of urine may not be a factor in many cases. The data in Table 4 show that, while absence of any pyelectasis frequently prognosticates a

TABLE 4.—*Correlation of Presence and Degree of Pyelectasis with Results*

Degree of Pyelectasis	*No. of Cases*	*Cured*	*Improved*	*Same*	*Worse*
None	34	8	5	19	2
1st	36	15	7	13	1
2d	15	7	7	3	
3d	3	1	2		

TABLE 5.—*Correlation of Degree of Ptosis with Results*

Degree of Ptosis	*No. of Cases*	*Cured*	*Improved*	*Same*	*Worse*
1st	24	7	8	7	2
2d	27	7	5	15	
3d	32	12	7	13	
4th	4	3	1		

poor therapeutic result, the degree of pylectasis when present cannot be used as an index of the results to be expected. Patients upon whom pyeloureteroplasty was done at the time of nephropexy are not included in this tabulation.

Degree of Ptosis: In general, patients with marked ptosis obtained the best results from nephropexy (Table 5). Otherwise the degree as shown by preoperative urographic study is not significant in prognosticating results.

Correlation of Surgical Technic with Postoperative Results.—The technics employed were grouped into four classes: (1) combined stripping and fixation of the renal capsule and construction of a sling by suture of the adipose fascia to the lumbar muscles (Fish and Hazzard, Albarran, Edebohl, Young, Horsley); (2) fixation sutures through the intact renal capsule and construction of a sling from the adipose fascia (Kelly); (3) the use of an adipose sling only (Demming, Dodson) and (4) stripping and fixation of the capsule without the adipose fascia sling (Randall and Campbell, Strode, Vogel).

The results of this correlation are given in Table 6. It is apparent that the method used in fixing the kidney in place has little bearing on the results obtained.

During the past twelve years most of the operations in our private cases have been done by the combined method, as follows: The renal capsule is stripped from the upper half of the kidney and is rolled downward on both the ventral and the dorsal surface of the kidney. Sutures of No. 1 chromic catgut are placed through this rolled capsule; those in front are inserted above the twelfth rib, and those behind are passed through the lumbar muscles near the attachment of the diaphragm. They are tied while the kidney is held up in place. The adipose fascia is then sutured to the lumbar muscles below the lower pole of the kidney.

Correlation of Time of Postoperative Ambulation with Results. — During the past ten years most of the patients have been ambulatory on the second to the fourth postoperative day. A many-tailed (Scultetus) binder has been applied immediately after the operation and kept tight and worn constantly for four weeks. It is our contention that a sudden strain, such as is caused by coughing, sneezing or laughing, is more likely to break the kidney loose from its fixation than is standing or walking in the upright position. Postoperative pyelograms show that the results are as good when the patient is allowed to be up during the first week as when he is kept in bed for several weeks.

Comparison of Results Between Nephropexy Performed as a Primary Procedure and Combined with Another Operation on the Kidney.—In 31 patients nephropexy was done in conjunction with another major procedure on the kidney. In most of these it is probable that the results obtained after the operation were due more to the other procedure than to the nephropexy. When ureterolysis and/or renal sympathectomy were done in conjunction with

TABLE 6.—*Correlation of Technic of Nephropexy with Results*

Type of Nephropexy	*No. of Cases*	*Cured*	*Improved*	*Same*	*Worse*
Capsule stripped and fixed; Gerota fascia sling	37	15	7	14	1
Capsule stripped and fixed to psoas fascia and ribs	31	11	7	12	1
Sutures through capsule and kidney to psoas	27	7	5	13	2
Sutures through capsule; and Gerota fascia sling	18	10	4	3	1
Gerota fascia sling alone	6	4	1	1	

TABLE 7.—*Comparison of Results of Nephropexy Alone and Combined with Other Procedures*

Procedure	*No of Cases*	*Cured*	*Improved*	*Same*	*Worse*
Primary nephropexy	88	29 (33%)	18 (20.5%)	39 (44.3%)	2 (2.2%)
Nephropexy with pyelithotomy or ureterolithotomy	14	11 (78.6%)	1 (7.1%)		2 (14.3%)
Nephropexy with miscellaneous procedures*	17	7 (41.2%)	5 (29.4%)	4 (23.5%)	1 (5.9%)

*Exploration of kidney
Renoplasty for caliectasis
Decapsulation
Pyeloureteroplasty
Excision of renal cyst
Division of horseshoe kidney

TABLE 8.—*Comparative Results of Nephropexy Alone and Combined with Sympathectomy*

Procedure	*No. of Cases*	*Cured*	*Improved*	*Same*	*Worse*
Nephropexy alone	66	21 (31.8%)	16 (24.2%)	27 (40.9%)	2 (3.1%)
Nephropexy with sympathectomy	22	8 (36.4%)	2 (9%)	12 (54.5%)	

nephropexy, it was counted as primary nephropexy. When pyelolithotomy or nephrolithotomy was done as the primary procedure and nephropexy was incidental, the results were better than when some other renal operation was performed with nephropexy (Table 7).

Denervation of the renal pedicle (sympathectomy) was done a few years ago in an effort to relieve nephralgia of unknown origin. It consisted of stripping the nerves from the renal vessels and the pelvis, thus attempting to remove the paths by which pain sensation was carried from the kidney. We have not done this procedure during the past ten years, but there are some urologists who continue to do it. The recorded results of this procedure (Table 8) indicate that sympathectomy offers little, if any, additional benefit.

COMMENT AND CONCLUSIONS

Attempts to correlate the preoperative symptoms and signs revealed by patients with renal ptosis with the results to be expected from nephropexy proved quite disappointing. Far from establishing any particular symptom or symptom complex as a significant prognostic tool, the authors' statistics largely contradict the value of those features offered as prognostic aids in the literature of the past ten years. As indicated by the tables, the degree of ptosis and of pyelectasis has some specific cance, and that questionable, only in the extremes. The features of nephroptosis generally considered of renal prognostic significance frequently have no such value.

Nevertheless, of 88 patients with troublesome to severe distress the authors were able entirely to relieve 29 and significantly to improve 18, which justifies the procedure when honest appraisal leads one to believe it should be helpful. The authors agree with Braasch that, after utilizing every measure available for such appraisal, the urologist still can have only an educated guess at the results. The significantly better results in private cases over clinic cases probably reflects the value of mature and exhaustive appraisal.

Speaking from general impressions gained during this study, the authors agree with Braasch also that one should hesitate to perform nephropexy on a patient whose pain is vague and associated with general complaints of fatigue, headache and nervousness; the patient who has similar pain in both sides, the midback, and the breast, in the shoulder, etc.; and the patient who has previously experienced great relief from every form of therapy, only to have her distress recur a little later. Better results may be anticipated if the patient describes definite, persistent pain, localized to the area of the ptosed kidney (Braasch; Hess et al.).

Study of the authors' cases of nephroptosis treated over a period of twenty-six years indicates that no particular signs or symptoms constitute a really dependable basis for prognosticating the results of nephropexy.

ZUSAMMENFASSUNG UND SCHLUSSFOLGERUNGEN

Versuche, die präoperativen Beschwerden und Krankheitszeichen von Patienten mit Nierensenkung mit den von einer Nephropexie zu erwartenden Erfolgen in Beziehung zu setzen, haben sich als recht enttäuschend erwiesen. Weit entfernt davon, irgendwelche besonderen Krankheitsziechen oder Symptomenkomplexe als bezeichnende Hilfsmittel in der Prognose anzusehen, widerlegen die Verfasser in ihren Statistiken sehr erheblich die Brauchbarkeit von Befunden, die im Schrifttum des letzten Jahrzehnts als prognostiche Kriterien angeboten worden sind. Ihre Tabellen zeigen, dass der Grad der *Senkung und der Nierenbeckenerweiterung* eine gewisse wenn auch nicht einwandfreie Bedeutung in extremen Fällen hat. Die allgemein als prognostich wichtig angesehenen Charakteristiken der Nierensenkung sind häufig wertlos.

Nichtsdestoweniger ist es den Autoren gelungen, 29 von 88 Kranken mit lästigen bis heftigen Beschwerden völlig symptomfrei zu machen und 18 zu bessern. Dieser Erfolg rechtfertigt das Verfahren, wenn eine ehrliche Auswertung zu der Annahme führt, dass dem Kranken geholfen werden kann. Die Verfasser stimmen mit Braasch in der Meinung überein, dass der Urologe *auch nach Ausnützung aller verfügbaren* prognostischen Möglichkeiten nicht mehr als hoffen kann, dass der Eingriff zu einen Erfolge führt. Dass die Resultate bei poliklinischen Patienten weniger gutsind als bei Privatpatienten sind, beweist wahrscheinlich, wie wichtig eine auf Erfahrung begründete und erschöpfende Auswertung des Falles ist.

Die allgemeinen Eindrücke, die die Verfasser während der vorliegenden Untersuchungen gewonnen haben, führen sie dazu, mit Braasch auch darin übereinzustimmen, dass man mit der Ausführung einer Nephropexie zurückhaltend sein soll, wenn der Patient nur über unbestimmte und mit Müdigkeit, Kopfweh und Nervosität verbundene Schmerzen klagt, wenn er ähn liche Schmerzen in der Schulter, im Rücken, in der Seite oder in der Brust hat, oder wenn alle möglichen anderen Behandlungsmethoden vorher zu einer grossen Besserung der Beschwerden geführt haben, ein

Rückfall jedoch sehr bald wieder eintrat. Mehr Berechtigung zur Hoffnung auf Erfolg hat man bei Patienten, die über bestimmte dauerhafte in der Gegend der gesenkten Niere lokalisierte Schmerzen klagen (Braasch; Hess u.A.).

Das Stadium der Fälle von Nierensenkung, die die Verfasser in einem Zeitraum von 26 Jahren behandelt haben, ergibt, dass keinerlei besondere Krankheitszeichen oder Beschwerden eine wirklich zuverlässige Basis zur Prognose der Ergebnisse der Nephropexie abgeben.

RÉSUMÉ ET CONCLUSIONS

Des essais de corrélation entre les symptômes pré-opératoires et les résultats de la néphropexie dans les cas de ptosis rénale se sont révélés décevants. Les statistiques des auteurs sont en nette contradiction avec les signes de pronostic proposés dans la littérature de ces dix dernières annés. Comme l'indiquent les tableaux, le degré de ptose et de de pyélectasie one uñe certaine valeur—elle-même problématique—dans les cas extrêmes, que l'on peut fréquemment dénier aux symptômes de la néhpoptose auxquels est en général accordée une grande valeur au point de vue du pronostic. Les auteurs ont au cependant enregistré, sur 88 cas bénins à graves, 29 quérisons complètes et 18 améliorations, résultats qui légitiment la néphropexie lorsqu'elle dictée par une évaluation judicieuse. Les auteurs sont en accord avec Braasch, selon lequel l'urologiste, après avoir recouru à tous les moyens à disposition pour une telle appréciation, ne peut que se livrer à des conjectures quant au pronostic. Les résultats nettement supérieurs des cas de clientèle privée sur les cas hospitaliers indiquent la valeur d'une appréciation mûrement approfondie de chaque cas.

Partant d'impressions générales recueillies au cours de cette étude, les auteurs sont également d'accord avec Braasch sur le point suivant: il faut hésiter à pratiquer une néphropexie chez les malades présetant une douleur vague associée à des symptômes de fatique générale, à des céphalées et à un état de nevosité générale; en cas de douleurs bilatérales médiodorsales, thoraciques, des épaules, etc; en cas de récidive aprés une thérapeutique quelconque. De meilleurs résultats peuvent être obtenus lorsque la douleur est bien définite, persistante et localisée au niveau du rein ptosé (Braasch, Hess et al.).

Il ressort de l'étude des cas de néphroptose traités par les auteurs durant une période de 26 ans, qu'aucun signe ou symptôme particulier ne constitue une base réellement solide et sûre pour le pronostic des résultats de la népropexie.

RIASSUNTO E CONCLUSIONI

Ogni tentativo di mettere in rapporto in segni clinici della ptosi renale con i resultati che si ottengono dalla nefropessia si dimostraprivo di valore. Lungi dall'attribuire a quaksivoglia segno o complesso di segni il minimo valore prognostico, le ricerche dell'autore dimostrano che quegli elementi che in passato erano ritenuti validi a questo scopo non lo sono affatto.

Cionondimeno su 88 malati con disturbi di grado vario l'autore ha ottenuto la guarigione in 29 e un notevole miglioramento in altri 18. Egli è d'accordo con Braasch che, valutati tutti gli elementi, la previsione del risultato è sempre difficile.

E' del parere, inoltre, che si deve essere molto cauti nel fare la nefropessia a un malato che abbia soltanto dolori vaghi, facile affaticamento, cefalea, irritabilità, oppure che abbia dolori bilaterali, o al petto, alle spalle etc.; o aun malato che abbia già ottenuto miglioramenti con qualunque altro tipo di terapia tentato in precedenza, ma con ricomparsa dei disturbi a breve distanza di tempo. I risultati migliori si possono ottenere, invece, in quei malati che descrivono il loro disturbi come un dolore ben definito, persistente,

localizzato in corrispondenza del rene ptosico.

La conclusione dello studio di un gruppo di malati curati per la nefroptosi in un periodo di 26 anni è che non esiste alcun segno clinico che possa far prevedere, prima dell'intervento quale sarà il risultato definitivo.

RESUMEN Y CONCLUSIONES

Todos los intentos hechos hasta hoy para correlacionar le sintomatología de la ptosis renal con los resultados que cabrían esperarse de la nefroplexia han sido inútiles.

Lejos de querer dar valor de pronósico a un síntoma aislado o a un síndrome, el autor presenta una estadística que contradice todos los intentos de hacerlo así que han aparecido en la literatura durante los últimos 10 años. Como aparece en dicha estadística, la significación pronóstica que tienel grado de ptosis o el grado de prelectasia solo tiene valor en casos extremos; por lo general la forma de la ptosis renal no tiene interés pronósico.

Sin embargo, puesto que entre 88 enfermos que aquejaban desde molestias ligeras hasta dolores intensos se logró la curación de 29 y la mejoría de 18, el tratamiento empleado está justificado, siempre que una apreciación sincera de los síntomas lleve al criterio de que aquél será útil. El autor está de acuerdo con Braasch en que, después de usar todos los medios para llegar a esa apreciación, el urólogo sólo puede hacer suposiciones sobre los resultados.

El que los resultados en la práctica privada del a profesión sean mejores que en los enfermos de clínica, da idea del valor que tiene una exploración detenida y completa.

En cuanto a las impressiones generales que se derivan de este estudio, los autores están también de acuerdo con Braasch en que no es aconsejable practicar la nefroplexia en enfermos que se quejan de dolores vagos, asociados con astenia, cefálesas y nerviosismo; tampoco en aquellos que padecen dolores similares en ambos lados, o en la espalda, hombro y pecho, ni en los que mejoran considerablemente con cualquier tratamiento aunque enseguida vuelven a empeorar. En combio, aquellos enfermos que padecen dolores fijos y persisentes, en el área del riñón caído son los que más mejoran con la intervención.

El estudio de todos los casos de nefrosis que durante 26 años han observado los autores indica que la sintomatología de esta enfermedad no presenta ningún signo sobre el que puede basarse claramente el pronóstico.

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Neurologic Surgery

Laminectomy in Patients with Injuries of the Spinal Cord*

A. ESTIN COMARR, M.D., F.A.C.S., F.I.C.S., D.A.B.
LONG BEACH, CALIFORNIA

The author presents a statistical study of the value of laminectomy in the treatment of patients with injuries of the spinal cord. He points out the difference of opinion on this topic and offers a basis for determining whether laminectomy is or is not indicated, namely, the presence or absence of a spinal manometric block.

Other features of the study are presented in tabular form, with general comments by the author.

A WIDE difference of opinion exists concerning the indications for laminectomy in patients with recent closed traumatic lesions of the spinal cord. Some surgeons maintain that all acute injuries of the cord require laminectomy; others, that there are relatively few indications.

After reviewing the results in the cases of 579 laminectomized and 279 nonlaminectomized patients in a previous study, I concluded that the presence or absence of a spinal manometric block is a basic criterion upon which to operate.[1]

The purpose of this paper is to compare the results of my first study to those obtained with an additional 89 recently discharged patients.

Comparison of Results.—The degree of improvement, as presented in the tables, is as follows: as long as functional sensory or motor return was observed in two segments or more, it was recorded as improvement.

The first study showed that 92 (16 per cent) of 579 laminectomized patients and 80 (29 per cent) of 279 nonlaminectomized patients showed some improvement. The second study showed that 16 (25 per cent) of 64 laminectomized and 15 (60 per cent) of 25 nonlaminectomized patients showed some improvement. Therefore, a grand total of 108 (17 per cent) patients of 643 laminectomized patients and 95 (31 per cent) of 304 nonlaminectomized patients showed some improvement (Table 1).

The first study showed that the order of improvement, according to vertebral level, for both the laminectomized and the nonlaminectomized patients was (1) lumbar, (2) cervical and (3) thoracic. The second study showed the following order of improvement: (1) cervical, (2) lumbar and (3) thoracic. The order of improvement in the combined study was: (1) lumbar, (2) cervical and (3) thoracic (Table 2).

[illegible]

[illegible]

[illegible]

[illegible]

TABLE 1.—*Improvement with and without Laminectomy: Time Element*

	Total No. of Patients	No. of Improved	Per Cent Improved
First Study			
With laminectomy			
1-12 hr.	97	15	16
12-24 hr.	86	12	14
24-48 hr.	36	10	28
48-72 hr.	22	6	27
3 days-1 wk.	63	9	14
1 wk.-1 mo.	125	25	20
1 mo.-3 mo.	70	6	9
3 mo.-6 mo.	37	5	14
6 mo.-1 yr.	26	3	12
Over 1 yr.	17	1	6
Total	579	92	16
Without laminectomy	279	80	29
Total	858		
Second Study			
With laminectomy			
1-12 hr.	14	4	29
12-24 hr.	15	2	13
24-48 hr.	7	4	57
48-72 hr.	6	3	50
3 days-1 wk.	3	1	33
1 wk.-1 mo.	7	0	0
1 mo.3- mo.	5	2	40
3 mo.-6 mo.	4	0	0
6 mo.-1 yr.	3	0	0
Over 1 yr.	0	0	0
Total	64	16	25
Without laminectomy	25	15	60
Total	89		
Combined Study			
With laminectomy			
1-12 hr.	111	19	17
12-24 hr.	101	14	14
24-48 hr.	43	14	33
48-72 hr.	28	9	32
3 days-1 wk.	66	10	15
1 wk.-1 mo.	132	25	19
1 mo.-3 mo.	75	8	11
3 mo.-6 mo.	41	5	12
6 mo.-1 yr.	29	3	10
Over 1 yr.	17	1	6
Total	643	108	17
Without laminectomy	304	95	31
Total	947		

In neither of the studies was there a single patient who improved in the presence of manometric block without laminectomy (Table 3).

The first study showed that 1 per cent of the laminectomized patients and 6 per cent of the nonlaminectomized patients were discharged walking without aids of any kind. The second study showed that none of the laminectomized and 8 per cent of the nonlaminectomized patients were discharged walking without aids of any kind. The combined study showed that 1 per cent of the laminectomized and 6 per cent of the nonlaminectomized patients were discharged walking without aids of any kind (Table 4).

Table 5 shows that 9 patients out of 89 are ambulatory with prosthetic aids. Four of the 9 had been laminectomized and could walk for short distances with prosthetic appliances, but for practical purposes wheelchairs were required. The remaining 5 patients had not been laminectomized; 2 could walk without aids of any kind, 1 could walk with 2 Canadian crutches and two short leg braces, and 2 could walk short distances (one with two canes, the other with a walker). For practical purposes, however, the 2 last mentioned required wheelchairs.

COMMENT

The results of the second, although smaller, study confirm those of the first study.

It is my opinion that the absence of block, in general, indicates that the neural structures are not being continuously seriously compressed, that maximum destruction has already occurred and that nothing is to be gained by laminectomy. The presence of a block, however, remains an indication for decompressive intervention, because it offers the patient some chance of improvement.

In both studies, patients with complete

TABLE 2.—*Improvement with and without Laminectomy: Vertebral Level*

	With Laminectomy			Without Laminectomy		
	No. of Patients	*No. Improved*	*Per Cent Improved*	*No. of Patients*	*No. Improved*	*Per Cent Improved*
First Study						
Cervical	61	12	20	115	36	31
T 1-6	115	10	9	32	3	9
T 7-12	285	32	11	84	16	19
Lumbar	118	38	32	48	25	52
Total	579	92	16	279	80	29
Second Study						
Cervical	24	10	42	17	13	76
T 1-6	7	1	14	1	0	0
T 7-12	21	2	6	4	1	25
Lumbar	12	3	25	3	1	33
Total	64	16	25	25	15	60
Combined Study						
Cervical	85	22	26	132	49	37
T 1-6	122	11	9	33	3	9
T 7-12	306	34	11	88	17	19
Lumbar	130	41	31	51	26	50
Total	643	108	17	304	95	31

blocks and without laminectomy did not improve; only a relatively few of those with complete block, however, as a result of laminectomy; in other words, a number of patients with block have been laminectomized needlessly. This shows that no reliable method is available as yet for determining which patients with manometric block should not be laminectomized. The roentgen appearance of the vertebrae does not supply such a method. I have seen patients with excellent alignment and without neurologic improvement and others with improvement despite malalignment.

In my opinion a progressive neurologic deficit indicates laminectomy and a progressive neurologic recovery contraindicates it. Table 1 shows that laminectomy, when indicated, need not be done immediately in all cases. In the first study, some patients benefited by operation delayed up to one year. Laminectomy after more than one year, however, had no practical value except when it was done exclusively for psychic reasons, at the patient's specific request. The conservative attitude toward immediate laminectomy serves a threefold purpose: 1. It provides time in which edema may recede and with it the manometric block that was present immediately after injury, making laminectomy unnecessary according to my criterion. Frequently, operative reports of very early laminectomy reveal that there was "a sudden expulsion of the cord" when the dura was incised. The sudden release of pressure may have caused prolapse and destruction of what intact tracts may have remained after injury. 2. The physician can examine the patient thoroughly for other complications such as injury to internal organs, damage to the brain or osseous fracture. 3. The preparation of the patient for surgical treatment is improved by treating the systemic shock as against the spinal shock.

Although the literature contains reports of early laminectomy for cervical lesions without immediate operative deaths,

TABLE 3.—*Relation of Manometric Evaluations and Improvement*

	No. of Patients	Number Improved	Per Cent Improved
*First Study**			
Block			
Laminectomy	100	12	12
No laminectomy	25	0	0
No Block			
Laminectomy	21	6	29
No laminectory	106	40	38
Total	252	58	
*Second Study***			
Block			
Laminectomy	19	3	16
No laminectomy	2	0	0
No Block			
Laminectomy	3	3	100
No laminectomy	19	14	74
Total	43	20	
Combined Study†			
Block			
Laminectomy	119	15	13
No laminectomy	27	0	0
No Block			
Laminectomy	24	9	33
No laminectomy	125	54	43
Total	295	78	

*858 patients in study (252 manometric tests).

**89 patients in study (43 manometric tests).

†947 patients in study (295 manometric tests).

TABLE 4.—*Ambulation without Aids*

	With Laminectomy	Without Laminectomy
1st study	7/579, or 1%	16/279, or 6%
2nd study	0/ 64, or 0%	2/ 25, or 8%
Combined study	7/643, or 1%	18/304, or 6%

one must not overlook the deaths occurring in the remote postoperative period from hemothorax, atelectasis, etc. Considering how few remarkable results follow laminectomy in patients with cervical lesions and manometric blocks, I cannot condone immediate laminectomy for these patients.

I have recently observed 2 patients with cervical lesions who lost normal voluntary control of the hands after laminectomy. Scheibert has proposed that perhaps the mishap is not due to the operation but occurs during anesthesia when hyperextension is used for endotracheal intubation.[2] His suggestion that local anesthesia be used for cervical laminectomy therefore seems well founded.

Many patients arrive with a history of laminectomy performed while the patient was unconscious. The functional returns of these patients have not been remarkable; I cannot see the rationale of immediate laminectomy, therefore, in the presence of a state of unconsciousness.

One must not imply from the foregoing that time does not play a role. Once a decision has been reached to operate, the operation should be done immediately. Too often indications are based on emotions rather than on scientific facts. A familiar and frequently heard suggestion is, "If we're going to give this patient a chance to walk, he must have a laminectomy!" Yet, how many laminectomized patients ever walk (Tables 4 and 5)?

In the first study I concluded that functional return was greatest in patients with lumbar lesions, since injuries of the cauda equina are similar to peripheral nerve lesions. The second study, however, though admittedly smaller, indicates that more improvement occurred in the patients with cervical lesions. Perhaps this reversal of order of improvement can be explained by the fact that I was more critical in the second study, realizing that the functional return in patients with lumbar lesions, in most instances, was compatible with the very level of the injury. Table 5 shows that in the second study not a single patient with a lumbar lesion walked without the use of aids, whereas 2 patients with cervical lesions did. These data from the second study are even more emphasized by those of the first study, which showed that patients with cervical lesions (laminectomized as well as nonlaminectomized) were discharged without aids of any kind

TABLE 5.—*Statistics on Ambulatory Patients of Second Study*

Patients	Vertebral Level	Neuro. at Onset	Block	Bladder Sensation	Bladder Control	Ambulation
Laminectomy						
1. R. W.	T9	Comp.	?	Near normal	Near normal	2 C.C. (wheel chair)
2. D. W.	T12	Comp.	Yes	None	None	1 L.L. (wheel chair) 1 S.L. 2 canes
3. W. O.	L1	Comp.	Yes	None	None	1 L.L. (wheel chair) 1 S.L. 2 canes
4. P. P.	L3	Inc.	?	None	None	1 S.L. (wheel chair) 2 C.C.
No laminectomy						
1. R. G.	C	Comp.	No	Normal	Normal	No aids
2. C. P.	C	Comp.	No	Normal	Normal	No aids
3. W. H.	C	Comp.	No	Near normal	Near normal	2 canes (wheel chair)
4. R. H.	C	Comp.	No	Near normal	None	Walker (wheel chair)
5. R. G.	L4-5	Comp.	?	Near normal	None	2 C.C. 2 S.L.

in more instances than were those with lumbar lesions.

Observation of patients who have undergone repeated laminectomies have not been rewarding so far as functional return is concerned. Repeated operations on lesions of the cauda equina, done in order to improve ambulation, can be dangerous; I have observed patients who lost normal sensation and control of the urinary bladder after the second intervention. Although function of the bladder is highly important because the life span of this type of patient is directly proportionate to the status of the urinary tract, assuming that all other systems are essentially normal.[5] Urologic considerations are more fully appreciated when one realizes that fewer than 10 per cent of patients with injuries to the spinal cord have normal or nearly normal vesical sensation or control.

Gross observations of the cord at operation did not provide a reliable criterion with regard to functional prognosis unless the cord had obviously been transected. Many patients with a "normal-appearing cord" did not improve at all, while others with subtotal lesions became somewhat better. The surgeon must be cautious, therefore, in discussing the prognosis for functional recovery.

Tract conducting tactile sensibility recovered most frequently. Recovery of pain and temperature sensation came next. Poorest was the return of motor function.

Although I follow the aforedescribed indication for laminectomy, I realize that no two cases of injury to the spinal are alike, and this is considered before a final decision is made for or against laminectomy. The age of the patient, the lapse of time since injury, the cause of injury, the roentgen, manometric and psychic factors and any coexistent complications are thoroughly studied.

ZUSAMMENFASSUNG

Der Verfasser berichtet über eine statistische Untersuchung des Wertes der Laminektomie bei der Behandlung von Kran-

ken mit Rückenmarksverletzungen. Er weist auf die hier bestehenden Meinungsverschiedenheiten hin und schlägt als Grundlage zur Bestimmung, ob eine Laminektomie angezeigt ist oder nicht, das Bestehen oder Fehlen einer manometrisch nachweisbaren Blockierung des Wirbelkanals vor.

Andere Ergebnisse dieser Untersuchung werden in tabellarischer Form mit allgemeinen Anmerkungen des Verfassers dargestellt.

RÉSUMÉ

L'auteur présente une étude statistique sur la valeur de la laminectomie dans les lésions de la moëlle épinière. Il rappelle les divergences d'opinion dont elle fait l'objet, et propose une base de détermination pour son indication, constituée par la présence ou l'absence de blocage spinal manométrique.

Certaines caractéristiques ressortant de cette étude sont également présentées et commentées (statistiques sous forme de tableaux).

RESUMEN

El autor presenta un estudio estadístico del tratamiento de traumatismos de la médula espinal por la laminectomía. Señala que hay divergencias sobre este tratamiento, y toma como base, para indicar o no la laminectomía, la presencia o ausencia de bloqueo manométrico espinal.

SUMARIO

Apresenta uma estatistica do valor da laminectomia nas lesões da medula. Estabelece as diferenças de opinião e fornece as bases para determinar quando a laminectomia é ou não indicada, principamente em presença ou ausência de bloqueio manometrico.

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Editors' Note: Owing to an unfortunate printers' error, this article, *Laminectomy in Patients with Injuries of the Spinal Cord,* by Dr. Estin Comarr, F.A.C.S., F.I.C.S., D.A.B., appeared in the March issue of the Journal without the author's name on the title page and has therefore been reprinted in full in this issue. Our sincerest apologies are offered to Dr. Comarr and to the readers of the Journal.

Some Myofascial Impingements Against the Iliohypogastric and Ilioinguinal Nerve in Women

JAMES O. BROWN, B.S., M.S., Ph.D., F.I.C.S. (Anat.)
AND
LEIB J. GOLUB, B.S., M.D., F.A.C.S., F.I.C.S.
PHILADELPHIA, PENNSYLVANIA

AFTER examining patients during the menstrual period, Billig[1] stated that the pain of dysmenorrhea was localized in the region of the cutaneous distribution of the twelfth thoracic and first lumbar nerves (iliohypogastric and ilioinguinal nerves). Earlier, Theobald[2] had reported that pain induced in the cervix of the uterus was referred to the area of skin supplied by branches of the 1st lumbar nerve, and demonstrated relief from dysmenorrheal pain[3] by infiltrating the iliohypogastric and ilioinguinal nerves with a 2 per cent solution of procaine hydrochloride. In a preliminary report of a ten-year survey that included several thousand girls in the Philadelphia Public High Schools, one of us (L. J. G.[4]) asserted that the majority of those with severe dysmenorrhea complained of pain in the lower part of the abdomen or in the mid-low center of the abdominal wall.

Observations on 27 female cadavers revealed that in the majority of instances the iliohypogastric and ilioinguinal nerves united into a single trunk. In more than half the number of sides observed, these nerves were impinged against by muscle, or by connective tissue formations or by the nerves piercing the psoas major muscle.

Most girls with severe dysmenorrhea complained of pain in the region of the abdominal wall corresponding to the cutaneous distribution of the iliohypogastric and or ilioinguinal nerves. Whether myofascial impingements irritate these nerves concomitantly with dysmenorrhea is uncertain.

Scanty and incomplete information exists with regard to the variational morphologic aspect of the myofascial relations of the iliohypogastric and ilioinguinal nerves traversing the paravertebral region. It seemed reasonable, therefore, to look for structural differences and to see whether or not any possibility exists for impingement upon these nerves or irritation of them, by the muscular and or fascial formations with which they are intimately related.

Material and Method.—Twenty-seven female cadavers, histories for which were unavailable, in the students' anatomy laboratory were used for the observations

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From the Daniel Baugh Institute of Anatomy, Jefferson Medical College, and the Department of Obstetrics and Gynecology, Jefferson Medical College Hospital, Philadelphia.
Submitted for publication March 21, 1958.

TABLE 1.—*Peripheral Appearance of Nerves*

Iliohypogastric Nerve Ilioinguinal Nerve	Right Side	Left Side
Separate	5	3
Combined into single trunk	21	23
Joined with 12th thoracic (subcostal) nerve to form single trunk	1	1

After the peritoneum had been carefully reflected the psoas major and quadratus lumborum muscles and the upper branches of the lumbar plexus were exposed. The iliohypogastric and ilioinguinal nerves (or their combined trunk) were identified and explored spinalward, with considerable caution, so as to note nerve-fascia-muscle relations as the nerves emerged from between the large paravertebral muscles of this region or after they passed through the body of a muscle. When necessary, the peritoneum was stripped away from a portion of the abdominal surface of the diaphragm for further exposure.

Observation and Results. — Three patterns of the iliohypogastric and ilioinguinal nerves were noted upon their emergence from between or through muscles (Table 1): (a) They appeared separately, (b) they joined into a single trunk, (c) both combined with the twelfth thoracic (subcostal) nerve to form a single trunk.

The myofascial relations of the nerves on the right and left sides of the body are summarized in Table 2. Since individual

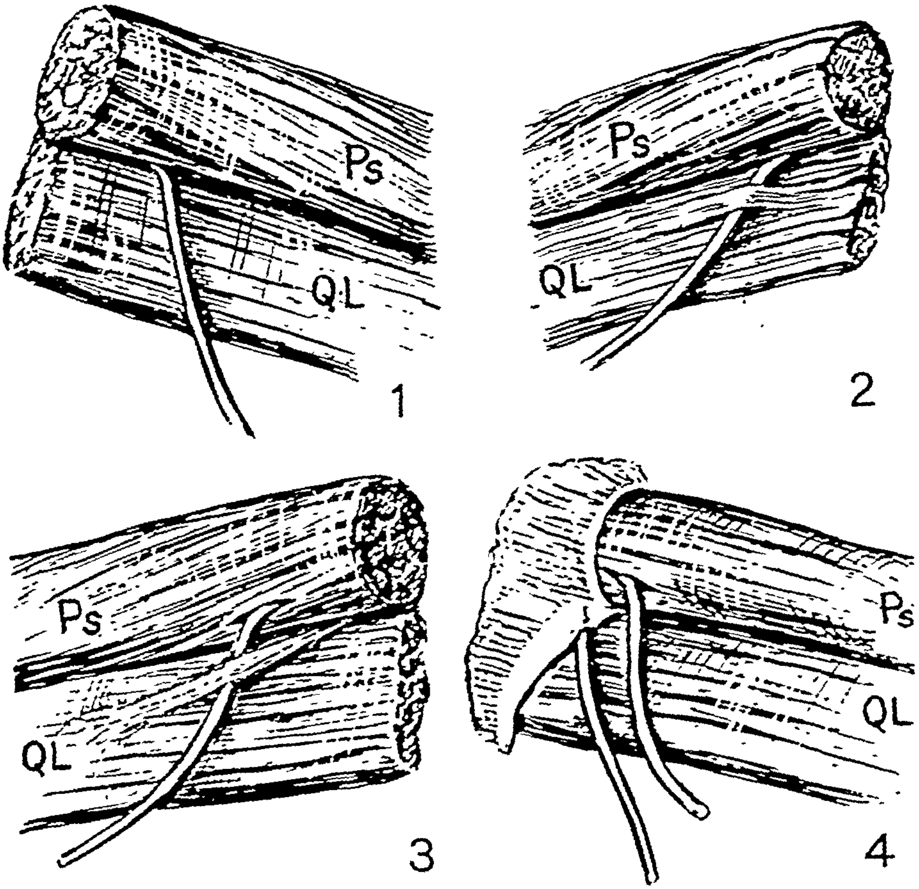
TABLE 2.—*Myofascial Patterns of Impingement against the Iliohypogastric and Ilioinguinal Nerves in Female Cadavers*

Pattern A *Nerve Passes Between Psoas Major and Quadratus Lumborum Muscles; No Impingement*		*Pattern B* *Nerve Impingement by Muscular Band from Quadratus Lumborum Muscle*		*Pattern C* *Nerve Impingement by Muscular Band from Diaphragm*		*Pattern D* *Nerve Pierces Psoas Major Muscle*		*Pattern E* *Nerve Impingement by Band of Connective Tissue; Otherwise Same as Pattern D*		*Pattern F* *Nerve Impingement by Band of Connective Tissue; Otherwise Same as Pattern A*	
R	*L*	*R*	*L*	*R*	*L*	*R*	*L*	*R*	*L*	*R*	*L*
/////	/////	///*	///	//	/	/ a'	/	/ c'	//	////**	////
/////	/////		/ e'			/ g	/d'			/ b'	/ f'
//	///					/ h				/ g'	/ i'
/ a	/ d									/ h'	
/ b	/ e									/ i	
/ c	/ f										

The following symbols are used in Table 2: (a) iliohypogastric nerve only, originating from second lumbar level; ilioinguinal nerve (a') from second lumbar level on right side showed Pattern D; (b) ilioinguinal nerve only; iliohypogastric nerve (b') on right side showed Pattern F; (c) iliohypogastric nerve only; ilioinguinal nerve (c') on right side showed Pattern E; (d) iliohypogastric nerve only, originating from second lumbar level; ilioinguinal nerve (d') from second lumbar level on left side showed Pattern D; (e) ilioinguinal nerve only; iliohypogastric nerve (e') on left side showed Pattern B; (f) ilioinguinal nerve only; iliohypogastric nerve (f') on left side showed Pattern F; (g) ilioinguinal nerve only; iliohypogastric nerve (g') on right side showed Pattern F; (h) ilioinguinal nerve only; iliohypogastric nerve (h') on right side showed Pattern F; (i) subcostal, iliohypogastric and ilioinguinal nerves formed common trunk; similar combination of nerves (i') on left side showed same pattern.

*Band of connective tissue accompanied muscle impinging against nerve.

**Muscle bundles both from psoas major and from quadratus lumborum muscles attached to connective tissue band impinging against nerve.



Figs. 1, 2, 3 and 4.—*Fig. 1*, sketch showing iliohypogastric and ilioinguinal nerves combined into a single trunk passing unobstructed between psoas major and quadratus lumborum mucles. *Fig. 2*, sketch similar to Figure 1, except that muscular band attaches combined nerves to quadratus lumborum muscle. *Fig. 3*, sketch showing relations similar to those in Figure 2, except that connective tissue band holds combined nerves against muscle. *Fig. 4*, iliohypogastric nerve is held firmly in position by connective tissue expansion from the lateral lumbocostal arch; ilioinguinal nerve pierces psoas major muscle, and it is vulnerable to muscular compression.

histories were unavailable, such a grouping as this has more significance for purposes of comparison than does the tabulation of bilateral variations in separate persons.

Of the different situations observed, that of Pattern A (Fig. 1) includes the largest single group of nerves of any of the categories recorded, although absolutely the number of nerves of all other patterns combined that are related to some type of myofascial impingement exceeds the number of nerves in Pattern A.

Although the nerves in Pattern B coursed similarly to those in Pattern A, a definite muscular strip from the quadratus lumborum muscle lay ventrally across them and binding them down (Fig. 2). In a few instances this impinging strip of muscle came from the diaphragm (Pattern C).

In Pattern D, these nerves or their combined trunk pierced the psoas major muscle. Sometimes, as in Pattern E, a ventrally lying connective tissue band aided, also, in anchoring the nerves (Fig. 3).

Nerves that emerged in a manner similar to those in Pattern A but which were crossed or covered ventrally by a definite bandlike formation of connective tissue (Fig. 4) composed Pattern F. Such nerves were considerably more stabilized, in the sense of being less freely movable than nerves of the other patterns, yet the nerves of the other patterns were apparently more liable to compression because of muscular contraction than were those in Pattern F.

COMMENT

From these observations, the iliohypogastric and ilioinguinal nerves in the female cadaver seem potentially vulnerable to compression by the overlying myofascial formations, perhaps more so in Patterns B, C, D and E, owing to the contractibility of the formations, than in Pattern F.

When these observations are considered in conjunction with the studies of previous investigators (Theobald[2]; Theobald[3]; Billig[1]) it would appear that the iliohypogastric and ilioinguinal nerves play an intimate role in the symptom complex of dysmenorrhea. Whether endocrine changes in electrolyte balance at the time of the menstrual period may be responsible for irritation of these nerves in women with some of these myofasical impingements is obscure. Further studies on persons with available histories may clarify some aspects of this problem, relating morphologic variation to dysmenorrhea.

Authors' Note: Sincere thanks are extended to Dr. H. Menduke, of the Department of Biostatistics of the Jefferson Medical College, for his worthy counsel.

RESUMEN

En 27 autopsias practicadas en mujeres se ha podido constatar que la mayor parte de las veces los nervios iliohipogástrico e ilioinguinal se unen en un tronco común; además en más de la mitad de los casos (contando los 2 lados de cada sujeto) uno de los 2 nervios al menos estaba incluído en una fascia o en masa muscular, o bien atravesaba la masa del psoas.

La mayor parte de las jóvenes que padecen dismenorrea se quejan de dolor en la región de la pared abdominal inervada por el iliohipogástrico o el ilioinguinal, Quizás las aderencias músculo-aponeuréticas descritas irritan a estos nervios coincidiendo con la dismenorrea.

ZUSAMMENFASSUNG

Beobachtungen an 27 weiblichen Leichen haben gezeigt, dass in der Mehrzahl der Fälle der N.iliohypogastricus und der N.ilioinguinalis sich zu einem Strange vereinigen.

In mehr als der Hälfte der untersuchten Präparate wurde festgestellt, dass die beiden Nerven entweder gegen Muskeln oder Bindegewebsgebilde gedrückt waren, oder dass sie den M.psoas major durchbohrten.

Die meisten unter schwerer Dysmenorrhöe leidenden Mädchen klagen über Schmerzen in einer Gegend der Bauchwand, die der Verteilung der Hautäste des N.iliohypogastricus oder des N.ilioinguinalis oder beider Nerven entspricht. Ob bei der Dismenorrhöe eine Reizung dieser Nerven durch Einklemmungen seitens der Muskeln oder Faszien eine Rolle spielt, ist ungewiss.

RIASSUNTO

Studi anatomici su 27 cadaveri di donna hanno dimostrato che nella maggioranza dei casi i nervi ileo-ipogastrico e ileo-inguinale si uniscono in un tronco unico.

In più della metà dei casi osservati i nervi erano compressi contro muscoli o

formazioni connettivali, oppure attraversavano il grande psoas.

In molte ragazze con grave dismenorrea vi è un dolore nella parete addominale che corrisponde alla distribuzione cutanea di questi due nervi. Non è possibile dire se questi siano irritati da compressioni miofasciali.

RÉSUMÉ

L'étude de 27 cadavres féminins a montré que les nerfs iliohypogastriques et ilioinguinaux se réunissent en un seul tronc dans la majorité des cas.

Dans plus de la moitié des côtés examinés, les nerfs soit ilio-hypogastriques soit ilio-inguinaux adhéraient au muscle ou au tissu conjonctif, ou ils pénétraient dans le muscle psoas.

La plupart des jeunes filles que l'auteur a examinées et qui présentaient une dysménorrhée grave, se plaignaient de douleurs au niveau de la paroi abdominale, correspondant à la distribution cutanée des nerfs ilio-hypogastriques et ilio-inguinaux. Les inclusions myofasciales irritent-elles ces nerfs en cas de dysménorrhée? Il n'est pas possible pour l'instant de se prononcer à ce sujet.

SUMÁRIO

Observações em 27 cadáveres do sexo femenino revelaram que na maioria dos casos os nervos ileohipogastrico e ileoinguinal apresentavam-se unidos, formando um simples tronco.

Em mais da metade dos casos observados, os nervos ileohipogastrico e ileoinguinal estavam impingidos contra os musculos por formações de tecido conjuntivo ou penetravam no musculo psoas.

A maioria das moças com dismenorrea severa queixam-se de dôr na região da parede abdominal correspondente a distribuição cutânea do nervo ileohipogastrico ou ileoinguinal.

É incerto se tais impingimentos mioaponeuróticos irrit am os nervos con comitantemente com a dismenorrea.

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The failure of the reactionaries in Vienna to accept the Semmelweis doctrine seems to have stemmed largely from the antagonism of Klein. In other parts of the world, the trouble was largely one of misunderstanding. Semmelweis himself had discovered the cause through cadaveric infection and had at first believed that this was the only source by which it reached the mother. Later he was forced to modify his theory and it was stated in Hebra's first paper that puerperal fever was sometimes an "infection by means of putrid exudation or discharge from a living organism."

—Slaughter

Vulval and Extraperitoneal Hemorrhage Complicating Obstetrical and Gynecological Surgery

H. MELVIN RADMAN, B.S., M.D., F.A.C.S., F.I.C.S.,
PHILIP GRANT, M.D., AND WILLIAM KORMAN, B.Sc., M.D.
BALTIMORE, MARYLAND

THE effusion of blood into the cellular structures of the vulva, vaginal walls and extraperitoneal space after delivery or a gynecologic procedure is a dangerous complication.

Both Williams[1] and DeLee[2] stated that Jacob Reuff in 1554 first recorded and described the vulval and perineal variety of hematoma. The gynecologic literature fails to reveal any study of this complication; most authors identify the entity as accidental to or consequent upon delivery.

The relation of hematoma to obstetrics has been studied extensively. In 1940 Hugh Hamilton[3] reviewed 12 cases under his own supervision, in addition to 127 which he collected and studied from the literature. He separated hematomas into two varieties: immediate and delayed. The former occurs soon after labor and is considered due to the trauma of delivery. This trauma is induced by spontaneous disruption of the tissues or by operative manipulation. The delayed type is said to be due to necrosis of blood vessels and may occur as late as twenty-one days post partum.[2] Illustrative of this is the following case.

CASE REPORT

Mrs. L. R., aged 33, was admitted to the hospital complaining of fever, chills and pain in the abdomen and rectum for three days. The previous obstetric history showed that she had had two spontaneous abortions after eight weeks of gestation in September and December, 1950. She had become pregnant again in July 1951, but three weeks prior to term it was apparent that there was a dead fetus *in utero*. On April 21, approximately two weeks before term, she went into labor and was delivered spontaneously of an abnormal, macerated fetus. The postpartum course was uneventful. Six weeks after delivery she began to complain of perineal and abdominal pain and inability to void urine. Accordingly, she was given antibiotics and admitted to the hospital. Examination revealed the abdomen to be extremely tender. A mass could be felt suprapubically to about 2 fingerbreaths above the symphysis. Pelvic examination revealed a large fluctuating mass in the left vaginal wall. This mass encroached upon the rectum and extended above the pubis. The uterus was small and well involuted. There was no palpable abnormality in either adnexal region.

The temperature was elevated to 101 F. The blood contained 15,000 leukocytes per cubic millimeter, with 80 per cent polymorphonuclears. The erythrocyte count and the hemoglobin level were within normal limits. Examination of the urine gave negative results. A diagnosis of infected paravaginal hematoma was made, and with the patient under general anesthesia this mass was evacuated. About 200 cc. of dark, foul-smelling fluid was drained through a vaginal incision; the area was drained. The patient made an uneventful recovery and was discharged in five days.

Further classification of this lesion must be made according to the direction of the spread of blood in relation to the pelvic fascia. If the hemorrhage occurred ex-

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From the Obstetrical and Gynecological Departments of the Hospital for the Women of Maryland and the Sinai Hospital of Baltimore.

Submitted for publication May 22, 1958.

ternally to the pelvic fascia, the infiltration dissected downward. On the other hand, if the bleeding appeared above the level of the fascia, the hemorrhage dissected into the extraperitoneal spaces.

Of the patients studied by Hamilton, 84 were reported to be primigravidae and 55 multigravidae. Hematomas appeared 82 times after spontaneous delivery and 57 times after operative delivery. This complication developed immediately in 121 patients; in the remaining 18 it was delayed. Only 1 death was recorded in Hamilton's own group, but 27 occurred in the collected series.

In 1952 McNally and Erlich[4] collected and reviewed 52 cases of hemotoma of the birth canal, the records of which were taken from 8 Baltimore hospitals in a study covering three to fifteen years. Of the patients in this group, 34 were primigravidae and 18 multigravidae. Spontaneous delivery occurred 9 times; 42 patients were delivered by forceps, and in 1 case there was a breech extraction.

The incidence of labial, vaginal and extraperitoneal hemorrhage in the postpartum period is low. It has been reported as varying from 1 in 1,600[5] to 1 in 7,500 (DeLee[2]). In presenting a study of lacerations of the birth canal, the authors expressed agreement with Savage[6] that "the incidence of vaginal hematomata cannot be estimated accurately for many go unnoticed and are more frequent than generally recognized."

In a ten-year study (1947-1957) of obstetric patients at the Hospital for the Women of Maryland, 62 hematomas of the birth canal occurred after approximately 20,000 deliveries In a similar study of gynecologic patients over the same period, there were only 8 such complications

In an eight-year study (1950-1957) of obstetric patients at the Sinai Hospital of Baltimore, 59 hematomas of the birth canal were observed in approximately 21,000 deliveries. A study of the gynecologic patients over the same period failed to reveal any such complication. The mortality rate was 0 (see table).

In 20,000 deliveries at the Hospital for the Women of Maryland, in the past ten years, postpartum hematomas were observed 62 times. In the gynecologic service only 8 patients had this complication. In 21,000 deliveries at the Sinai Hospital in the past seven years, postpartum hematomas were present 59 times. Statistics on this complication from the gynecologic service were not available.

According to the literature, primigravidae are affected more often than are multigravidae. In the authors' series the reverse was true. The complication was more often associated with operative than with spontaneous delivery.

Prophylactic treatment consists of thorough inspection of the operative site and alertness as to the possibility of the complication. Early active treatment is essential, with attention to the prevention of shock.

In recent years the mortality rate has been lowered to zero.

The mortality rate has been estimated as ranging from 12 to 40 per cent. This, however, does not concur with the reviewed literature or with the results of our study.

Williams[11] reported a mortality rate of 56 per cent; DeLee,[2] 12 to 40 per cent; Hamilton[3] only 8.3 per cent; and McNally and Erlich[4] 0. In our series also, no death occurred.

The amount of blood lost may range from slight infiltration to massive [illegible] orrhage, producing shock and death if it is not recognized and properly treated. Hemorrhage is always a serious complication, but the concealed variety is of even graver import, since it is often missed until the patient is *in extremis*.

The subject of retroperitoneal hemorrhage associated with pregnancy prior to delivery has been reported. This complication in the antepartum period is extremely rare but has been observed by Zummo, Williams and Uznanski[7] and by Callagher.[1b] It is mentioned here only to point out the conclusion that similar causative factors could exist in antepartum and postpartum patients as well as in patients subjected to gynecologic operations.

As a result of having encountered several seriously complicating postpartum and postoperative hematomas, a study was made of patients delivered and operated upon at the Hospital for the Women of Maryland, covering a ten-year period, and at the Sinai Hospital of Baltimore, over a seven-year period.

A complete review of the gynecologic patients of the Women's Hospital revealed that only 8 had complicating postoperative hematomas, which followed vaginal plastic procedures in 6 cases and abdominal procedures in 22. None proved fatal, and all were handled by evacuation of the clot, packing and blood transfusion. In the Sinai group, data on the gynecologic postoperative hematomas were not available.

In the obstetric group at the Women's Hospital, hematomas of one degree or another developed in 62 patients. Of these 20 were primigravidae and 42 multigravidae. Delivery was operative in 46 cases and spontaneous in 16. There were no deaths.

Of the obstetric patients studied at the Sinai Hospital, 22 cases of hematomas occurred in 22 primigravidae and 37 multigravidae. Operative delivery was necessary in 54 cases; while spontaneous delivery occurred in 5. There were no deaths.

It is necessary to separate into two parts the discussion of hematomas and extraperitoneal collection of blood in obstetric and gynecologic patients. The first is the easily recognizable and simply treated vulval and perineal hematoma. The second is the more often obscure and difficult to manage, i.e., hemorrhage into the paravaginal, anterolateral and retroperitoneal spaces surrounding the vagina, uterus, tubes and ovaries.

It is readily apparent that hematomas of the vulva, vagina and perineum are more frequently encountered in obstetric than in gynecologic practice. The reason is obvious, since more patients have babies than undergo gynecologic operations. There is always more vascularity of the pelvic organs and surrounding tissues in pregnancy than would be present in the nonpregnant state. Whatever may be the causative factor in either group, gentleness in the handling of tissues, meticulous attention to hemostasis and thorough inspection of the operative site are all cardinal steps in its prevention.

In the further discussion of hematomas of the gynecologic variety, Strauss, in Davis' *Gynecology and Obstetrics* listed several causes of hemorrhage that may produce hematomas: (1) torsion of a pedunculated mass; (2) subperitoneal rupture of a broad ligament varix; (3) partial or complete rupture of a pregnant uterus; (4) proliferation of an ovarian neoplasm with extension into the broad ligament; (5) hemorrhage into an ovarian or para-ovarian cyst or rupture of the same,[8] and (6) perforation of the uterus.

The majority of hematomas, once developed, involve superficial tissue only. These may go on, however, to develop into the more serious variety. They are quickly distinguished by a purplish discoloration;

Obstetrical Hematomas in Relation to Parity, Delivery and Mortality

Source	*Number of Cases*	*Primigravidae*	*Multigravidae*	*Operative Delivery*	*Spontaneous Delivery*	*Mortality, %*
Hamilton, 1940	139	84	55	82	57	8.3
McNally and Erlich, 1952	52	34	18	43	9	0
Women's Hospital Series, 1957	62	20	42	46	16	0
Sinai Hospital Series, 1957	59	22	37	54	5	0

they are associated with severe pain and tenderness. In fact, the severity of the pain is often the clue that should lead to the discovery of the lesion.

When there is bleeding above the pelvic fascia that forms at a higher level, the collection may become enormous. It may even occlude the rectum or the vagina.

Occasionally effusion of blood may start at the base of the bladder and extend upward into the extraperitoneal spaces. This is no longer a simple hematoma but a severe, uncontrollable loss of blood, seriously endangering the patient's life.

This type of hemorrhage complicating gynecologic and obstetric procedures is comparatively rare. Torpin[6] reported the cases of 28 patients who had this type of bleeding associated with pregnancy and delivery. Although in the majority of his patients rupture of the epigastric arteries occurred during pregnancy, in 10 it occurred after delivery and in 2 after abortion. Torpin observed that this complication was more frequent in multigravidae than in primigravidae. There was also some correlation to trauma, such as a severe cough or in external blow. The maternal mortality rate was 15 per cent.

Two illustrative cases are here reported. In the first, rupture of the epigastric vessels followed delivery. In the second, severe retroperitoneal bleeding followed parametrial fixation for prolapse of the uterus.

Case 1.—Mrs. M. H., aged [illegible], para 2, was admitted to the hospital at term, with spontaneous rupture of the membranes and apparently in labor. A frank breech extraction was done. After approximately two hours of excellent labor there was full dilatation and the patient was ready for delivery. Under gas oxygen anesthesia she was delivered of a live girl weighing 6 pounds 8 ounces (2,948 Gm.), over a left medio lateral episiotomy. The Guillemeau-Mauriceau-Smellie-Veit maneuver was used for the aftercoming head. A moderate amount of suprafundic pressure was exerted during the delivery. About five hours later the patient apparently was in shock. She was cold and clammy, sweating profusely, and the blood pressure in millimeters of mercury was 70 cystolic and 50 diastolic. Examination at this time revealed a large suprapubic mass that was extremely tender to palpation. Upon catheterization, a small amount of concentrated urine was obtained, after which two distinct masses could be palpated and a large suprapubic mass extending almost to the umbilicus, and another mass on the left, which gave a definite impression of being the uterus. A diagnosis of rupture of the uterus was made. The patient was given several transfusions, and when her condition warranted it an operation was performed. When the rectus sheath was opened, a tremendous amount of blood was observed in the anterior and paravesical spaces, extending down to the pelvic floor. There was a general ooze, but no definite bleeding point could be located. The peritoneum was opened sufficiently to determine the fact that the uterus was not ruptured. Despite continuous transfusion, the condition of the patient was poor. The extraperitoneal spaces were packed with gelfoam and gauze and then drained. With antibiotic therapy and supportive treatment, the patient made a steady recovery; she was discharged as well in ten days.

Case 2.—Mrs. L. P., para [illegible], was admitted to the hospital with a diagnosis of procidentia. There was marked protrusion [illegible] of five years' duration. [illegible] ditional pregnancies and the protrusion caused her great discomfort, the parametrial fixation type of operation was chosen. This was performed with ease, and no unusual blood loss or other complication was encountered at the time of operation. On the third postoperative day a routine red blood cell count revealed a hematocrit reading of 34, with 2,240,000 red blood cells per cubic millimeter. The patient was therefore given 500 cc. of blood. On the fifth postoperative day a moderate amount of dark blood began to ooze from the vagina. On the seventh postoperative day there was a sudden profuse hemorrhage; the patient went into shock. A transfusion was given, and she was moved to the operating room. Several small bleeding points were detected on the cut vaginal edges and the cervix. A secondary repair was done; the vagina was packed, and the patient was returned to her room. Several days later the bleeding recurred, and she was brought to the operating room for another repair. At this time an exploratory laparotomy was performed with the intent of removing the uterus, but it was apparent that the bleeding was in and from the left parametrial space. A large pack was inserted into this space, which controlled the bleeding. From then on the patient's recovery was uneventful. She was finally discharged as well on the twenty-fourth day after the first operative procedure. Repeated examinations revealed that she no longer had prolapse, cystocele or rectocele. She has had no further pregnancies up to the time of this report.

COMMENT

Vulval, paravaginal and extraperitoneal effusion of blood must be considered from the surgical as well as from the obstetric viewpoint. It is apparent that the surgical variety of this complication cannot be as frequent as the obstetric type. Over a period of ten years in an active gynecologic service, only 8 patients had to have postoperative hematomas. In obstetric practice, hematoma of the birth canal appears much more frequently, as is revealed by the observation of 62 such cases in 20,000 deliveries over a similar length of time; and 59 in 21,000 deliveries over a seven-year period.

In reviewing the literature it becomes obvious that a great deal has been accomplished in lowering the mortality rate. From rates previously as high as 40 to 56 per cent, the rate has been lowered to none. This decrease speaks well for the operating surgeons involved. It is due, probably, to close observation of the patient; the search for laceration of the vulva, vagina and perineum, and the active treatment of the latter once it is discovered. A more thorough search for blood dyscrasia and the employment of early and frequent transfusions have also been helpful.

Stress is placed upon the early recognition and treatment of the delayed type of hematoma. Whenever an operation or delivery occurs, constant vigilance is necessary to detect hemorrhage of the concealed type.

Once a lesion has been found, it is imperative to institute active treatment. Intravenous infusion of dextrose should be started, so that a vein may be open in case blood is necessary. Visible collections of blood should be observed closely. If progession of symptoms is noticed, immediate evacuation, with packing of the cavity of the hematoma, should be carried out. It is seldom that bleeding vessels are seen; delay in hemostasis, therefore, is not warranted by attempts to locate such vessels. Suture ligation in the cavity, with tight, firm packing and contrapacking, are indicated. Often palliative treatment is deleterious to the patient whose condition may rapidly deteriorate owing to the loss of blood or the loss of clot mechanism associated with a large hemorrhage.

Although hematomas develop frequently after spontaneous delivery, they appear more often after the operative type. In the previous series studied from the literature they appeared more often in primigravidae; in our series the reverse was true. The discrepancy is unaccountable, yet it will be noted that operative delivery was more frequent in the patients studied by us, and this may have some significance.

We wish to emphasize the importance of routine inspection of the involved structures after delivery or operation. An essential part of the early diagnosis of hematoma is alertness to its possibility. Once the diagnosis has been established, it is important to begin treatment.

SUMARIO E CONCLUSOES

Faz revisão dos hematomas pós-operatorios e do pós-parto, alem de analisar as hemorragias extraperitoneais.

Hematomas foram observados 62 vezes em 20.000 partos no Hospital de Maryland em 10 anos. Somente 8 mulhesres tiveram complicações pós-operatorias. Em 21.000 partos no Sinai Hospital em 7 anos houve 59 hematomas, não havendo dados estatisticos no serviço ginecologico desse hospital. A literatura registra que as primiparassão mais acometidas que as multiparas. Na serie do A. os achados foram inversos, tendo essa complicação sido mais frequente nos partos operatorios que nos naturais. A mortalidade recentemente caiu a zero. A prevenção consiste na exame cuidadoso do campo operatorio e a vigilancia. Preconisa o tratamento pronto com atenção á prevenção do choque.

RÉSUMÉ ET CONCLUSIONS

Etude sur les hématomes et les hémorragies extrapéritonéales post-opératoires et post-partum.

Sur 20.000 accouchements à l'Hôpital pour Femmes de Maryland il y a eu, au cours des 10 dernières années, 62 cas d'hématomes post-partum (8 cas seulement dans le service de gynécologie) et 59 cas sur 21.000 au Sinai Hospital, au cours des 7 dernières années. Selon la littérature cette complication est plus fréquente chez les primipares, mais l'auteur a constaté le contraire dans sa série de cas personnels.

Depuis quelques années la mortalité est nulle.

Le traitement prophylactique consiste en une inspection complète du territoire opératoire avec, en cas de complications, un traitement précoce actif associé aux mesures d'usage en vue d'éviter le choc.

ZUSAMMENFASSUNG UND SCHLUSSFOLGERUNGEN

Das Thema postoperativer und nachgeburtlicher Hämatome und extraperitonealer Blutungen wird einer Nachprüfung unterzogen.

Im Hospital for the Women of Maryland wurden bei 20 000 Entbindungen innerhalb der letzten zehn Jahre nachgeburtliche Hämatome 62 mal beobachtet. Auf der gynäkologischen Abteilung trat diese postoperative Komplikation nur bei acht Patientinnen auf. Im Sinai Hospital kam bei 21 000 Entbindungen in den letzten sieben Jahren 59 Nachgeburtshämatome vor. Von der gynakologischen Abteilung waren Statistiken über diese Komplikation nicht erhältlich. Nach den Berichten in der Literatur werden Erstgebärende öfters befallen als Mehrgebärende. In der Serie des Verfassers war das Umgekehrte der Fall. Die Komplikation trat häufiger bei operativen als bei spontanen Entbindungen auf.

In den letzten Jahren ist die Sterblichkeitsziffer auf Null herabgesunken.

Die prophylaktische Behandlung besteht insorgfältiger Besichtigung des Operationsgebietes und in der Wachsamkeit, mit der an diese mögliche Komplikation gedacht wird. Frühzeitige aktive Behandlung unter Beachtung der Vorbeugung eines Schocks ist von wesentlicher Bedeutung.

RESUMEN Y CONCLUSIONES

Se revisa el tema de la hemorragia extraperitoneales y los hematomas en el

postoperatorio o después del parto. En el hospital Ginecólogo de Meryland ha habido 62 casos con hematomas puerperales entre los 20.000 partos atendidos en 10 años; solo 8 en el postoperatorio de enfermas ginecológicas.

Entre los 21.000 partos asistidos en estos últimos 7 años en el Hospital Sinaí se han visto 59 casos de hematoma; no se señalan los casos resultados del departamento de ginecología.

La literatura afirma que las primigrávidas están más predispuestas a esto que las multigrávidas; sin embargo nuestra experiencia señala lo contrario. Por otro lado se presenta con más frecuencia en las enfermas operadas.

En estos últimos años el índice de mortalidad ha bajado a O.

Debe hacerse una buena profiláxis vigilando bien el campo operatorio si ha habido intervención y estudiando bien a la enferma temiendo complicaciones. El tratamiento ha de ser rápido, para prevenir el shock.

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The Middle Ages, an era of bronze and iron which emerged enveloped in a historical cloud of dust, did not represent a complete retrogression in medical knowledge. True, the stars of astronomy became the flickering lights of astrologic symbolism, and the chemist's test tube was transmuted into the bubbling crucible of the alchemist searching for the philosopher's stone. But the cathedrals became temples of study where the essences of classical knowledge were translated and poured into occidental molds, and the Arabs advanced pharmacology. although they suppressed the knife in favor of cautery.

—*Marti-Ibañez*

The Management of Puerperal Constipation With a Senna Preparation†

S. C. KASDON, M.D.,* AND B. O. MORENTIN, M.D.**

BOSTON, MASSACHUSETTS

Three random groups of 100 puerperae each were compared for the anticonstipation effectiveness of mineral oil milk of magnesia in one group, with a senna preparation in another and no cathartics in a third. The senna preparation eliminated the need for the third postpartum day enema in 84 per cent of the cases, as opposed to 13 and 16 per cent for the other groups.

The effectiveness of the product, with only limited undesirable side effects, makes it useful in the reduction of nursing care of the postpartum patient.

THE normal woman post partum rarely has a spontaneous stool in the first few days of the puerperium. The causes of this constipation are usually the following:[1] (1) the bowel has been emptied by cathartics and/or enema before labor or at onset of labor; (2) food and fluid intake are minimal during labor, which may last from twelve to eighteen hours; (3) there is normally a notable diuresis post partum that results in some dehydration of the intestinal contents; (4) the abdominal and perineal muscles, because of the distention of late pregnancy and labor, are ineffective expulsive agents; (5) postepisiotomy perineal discomfort and pain make the forcible evacuation of inspissated feces difficult, and (6) the normal tympany present in the puerperium, which may be related to intestinal paresis following the excessive swallowing of air during labor and delivery, contributes to the constipation.

The ubiquitousness of this postpartum complaint has become an economic and administrative problem in the obstetric departments of most hospitals, since the shortage of nursing personnel makes it undesirable to employ enemas for this type of constipation. The saline or soapsuds enema, used safely and effectively for many years on the second or third day post partum for the relief of constipation, has the disadvantage of requiring fifteen to twenty-five minutes of the nurse's time for each patient.

Cathartics, which are drugs to promote defecation, are present in needlessly large numbers and may well outnumber any other class of pharmaceutical preparation used in medicine. This is in no way an index of their usefulness, but it does represent the remarkable concern evidenced by most people with regard to bowel evacuation. Cathartics act by one of three fundamental mechanisms and may be classified as follows: (1) the irritant cathartics, which [illegible]

[illegible]

by nerve stimulation; (2) the bulk cathartics, which increase the contents of the intestinal tract and are made up of hydrophilic colloids, indigestible fibers or inorganic salts that retain water in the large bowel owing to the osmotic pressure they exert, and (3) the emollient cathartics, which lubricate the intestinal tract and in this manner facilitate the passage of feces.

Method and Experiment.—The search of a substitute for the postpartum enema led to the evaluation of a senna preparation[3] for comparative purposes with milk of magnesia and mineral oil, and no cathartics at all.

Senna is obtained from the dried leaves and pods of *cassia senna (cassia acutifolia)*. These contain glucosidal compounds which are themselves inactive. In the alkaline small intestine, however, they are hydrolyzed or oxidized by bacteria yielding oxymethyl-anthraquinones, which produce the cathartic action. The most common of these substances are emodin and chrysophanic acid. The special characteristics of various drugs in this group are probably due to differences in the isomers of these materials and in the stability of their glucosidal combination or to the presence of other associated substances, such as tannin and resins. Emodin cathartics include cascara sagrada, rhubarb and aloe as well as senna. They are also known as anthracene cathartics.

The patients in this study were 300 normal non-nursing women without obstetric complications and between 38 and 42 weeks of gestation, two-thirds of whom were clinic patients and one-third private patients. All were delivered through the pelvis, and none had unusual laceration or injury. The deliveries were all either spontaneous or low forceps deliveries, and episiotomy and repair were done in all of them. The distribution of parity in the two groups is demonstrated in Table 1. It reveals a statistical homogeneity that is surprisingly good for such a short series of subjects. The subjects were placed in any one of the three study groups, no one factor determining the category except for the numerical order of admission.

The mineral oil and milk of magnesia were used together in 15 cc. doses of each, administered by mouth at bedtime each night from the first night after the twelfth postpartum hour. The senna granules were administered in like manner at bedtime in 4 gm. doses. If dejection had not occurred by the third day after delivery, a soapsuds enema was administered in most cases to all three groups.

Results.—A total of 300 puerperal women were separated by numerical choice into the three equal groups for the purpose of reducing, by comparison, the nurse's time expended in the administration of enemas. The senna preparation used resulted in spontaneous dejections in 84 per cent of the women by the third day after delivery. The control group without anticonstipation medication and the group given milk of magnesia and mineral oil had spontaneous dejections on the third day after parturition in 13 to 16 per cent of cases, respectively. There were no significant toxic side effects in any of the groups studied.

In the dose levels used here, loose stools and/or griping pains in the large bowel occurred in 3 per cent of the group given mineral oil and milk of magnesia and in 8 per cent of the group given senna. A few patients who were not included in the study but were given 8 Gm. doses of the senna preparation had an appreciably higher incidence of loose stools and griping pains. Toxic manifestations were limited to these two complaints and in no case proved to be of serious import.

Since none of the patients followed in this study nursed their infants, no comment can be offered on the transmission of senna products through lactation. In no instances was a notable change in the color of the urine induced by the excreted chrysophanic acid.

The pronounced reduction of the need for enemas through the use of the senna preparation is apparent from Table 2. It is clear from this study that mineral oil and milk of magnesia, used together in 15 cc. doses of each, offer no clear advantage whatsoever over the omission of anticonstipation medication, as far as reduction in the need for the enema is concerned.

TABLE 1.—*Parity of Puerperae in Study of Senna Preparation and Postpartum Constipation*

Patient Group	*Number of Pregnancy* *1st*	*2d*	*3d*	*4th*	*5th*	*6th*	*7th*
No cathartics	40	30	12	9	5	3	1
Milk of Magnesia and Mineral Oil	46	17	19	4	8	3	3
Senna extract	42	24	16	10	6	2	

TABLE 2.—*Comparison of Results in Puerperal Constipation from Milk of Magnesia/Mineral Oil and Senna Preparation*

Bowel Evacuation and Postpartum Day	*No Cathartics*	*Milk of Magnesia/ Mineral Oil*	*Senna Preparation*
	No./%	*No./%*	*No./%*
3d day without requiring enema	13	16	84
3d day with enema required	83	77	14
4th day with enema required	4	7	2

COMMENT

The emodin cathartics act only on the large intestine, and the motor activity of the small bowel is probably uninfluenced. There is, however, a report that emodin directly perfused in the small intestine does cause an increased motility of the intestine.[4] This does not appear to be present with the ordinary doses of senna. It has been suggested[6] that the pharmacologic activity of senna extracts specifically stimulate Auerbach's plexus in the large bowel and that this causes prompt passage of fecal contents. The time required for the drugs to traverse the small intestine and the necessity for a bacterial liberation of the active principle delay the cathartic action up to six hours and occasionally twenty-four hours after administration. The emodin drugs are partly absorbed from the upper part of the intestinal tract and are excreted in body fluids. During lactation they may appear in the milk in sufficient amount to affect a nursing infant. Certain constituents of crude drugs may be excreted into the urine, coloring it. After administration of senna, for instance, chrysophanic acid is excreted by the kidneys. This compound colors acid urine yellow-brown and alkaline urine red-violet. Some emodin cathartics, especially cascara, taken over extended periods, result in melanotic pigmentation of the rectal mucosa. This has not thus far been reported in connection with the senna preparation used in this study.[5]

Senna was used as a cathartic in early Arabic medicine. This drug is more active than cascara sagrada and occasionally produces bowel evacuation in less than six hours after administration. It may cause considerable griping, and it has been suggested that this results from the presence of the resins in the preparation. This was a minor factor in the study here reported and certainly caused the patients less displeasure than did the administration of a soapsuds enema. The flavor of the commercial senna preparation used was entirely acceptable and pleasing to these 100 women. The effectiveness of the senna preparation in reducing the need for enemas during the puerperium is clearly apparent from this study.

ZUSAMMENFASSUNG

Drei Gruppen von je 100 zufällig zusammengestellten Wöchnerinnen wurden

hinsichtlich der Verstopfung behebenden Wirksamkeit verschiedener Mittel verglichen. Die eine Gruppe erhielt eine Kombination von Mineralöl und Magnesiamilch, eine andere ein Sennapräparat und die dritte andere Abführmittel. In der mit dem Sennapräparat behandelten Gruppe liess sich der Einlauf am dritten Tage nach der Entbindung in 84 Prozent der Fälle ausschalten, was bei den anderen beiden Gruppen nur in 13 und 16 Prozent der Fälle gelang.

Die Wirksamkeit des Sennapräparats, das nur eine sehr begrenzte Zahl von unerwünschten Nebenerscheinungen mit sich brachte, lässt sich zur Einsparung des Krankenpflegepersonals auf der geburtshilflichen Abteilung ausnutzen.

RÉSUMÉ

Trois groupes pris au hasard, comprenant chacun 100 cas de fièvre puerpérale ont servi de base pour l'etude des propriétés anticonstipantes des produits suivants: (1) huile minérale-lait de magnésie; (2) préparation de séné; (3) cathartiques. La préparation de séné a permis de supprimer le lavement du troisiéme jour après l'accouchement dans 84% des cas (13 à 16% pour les autres groupes).

L'efficacité du séné (troubles secondaires minimes)est précieuse du fait qu'elle réduit les soins post-partum.

RIASSUNTO

Vennero scelti a caso tre gruppi di 100 puerpere ciascuno e trattati il primo con olio minerale e late di magnesia, il secondo con senna e il terzo con catartici, onde studiare l'efficacit rispettiva di questi farmaci. La senna riesce a eliminare la necessità del clistere nell'84% dei casi, mentre ciò avviene rispettivamente solo nel 16 e nel 18% deli altri due gruppi.

Tale prodotto, pertanto, oltre ad avere solo scarsi effetti collaterali, si dimostra molto utile nell'assistenza post-partum.

RESUMEN

Se hace un estudio comparativo de 3 grupos de 100 puerperas cada uno, para observar el valor purgante de la magnesia, el senna y los catárticos.

El preparado de senna suprime la necesidad de administrar un enema laxante al tercer día del puerperio en el 84% de los casos, mientras que con los purgantes sólo se obtiene un 13 y un 16% de éxitos.

La eficacia del producto, cuyos efectos secundarios son mínimos, hace que sea útil para reducir las molestias del puerperio.

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* * *

Look at the cases not from the standpoint of textbooks and monographs. but as so many stepping-stones in the progress of your individual development in the art.

—*Osler*

Ophthalmologic Surgery

Binocular Simultaneous Cataract Extraction

JOHN SCILLIERI, M.D., F.I.C.S., D.A.B.
PATERSON, NEW JERSEY

BINOCULAR simultaneous cataract extraction is a controversial subject that is seldom discussed in the literature. Prevailing opinions favor the monocular removal of bilateral cataracts. All authorities agree, however, that the type of operation employed depends on the individual case and on the experience of the surgeon. There are a number of circumstances that favor binocular simultaneous cataract extraction. Patients dread the prospect of having one eye operated upon and knowing that another operation is planned for the other eye at some future date. The ophthalmologist may have convinced the patient prior to the first operation, but when the time comes for the second operation the patient frequently asks: "Why didn't you do both eyes and have it over with?" "If this eye didn't turn out good, can you guarantee the other?" "I won't take the chance and go through that again!" Or he may state "I won't go through this again, you should have done both of them while you had me on the operating table!"

A series of cases of bilateral simultaneous cataract extraction is presented. This operation was performed on all types of patients, regardless of physical condition or complications.

Diabetics and hypertensive patients—patients with cardiac insufficiency, psychotic patients, deformed arthritic patients, patients over 90 years of age and 2 under 50 (one 32 years old and one 98 years old) successfully done without complications not usually encountered in monocular surgery.

Several years ago I conceived the plan of a single hospitalization for cataract patients but with the extractions spaced a week apart. An elderly arthritic woman was one of the first to undergo this routine. Her systemic condition was such that two operations, separated by an indefinite interval of time, would have been a true hardship. Because of the successful results in this case, not only from the surgical but from the psychologic point of view, the same procedure was followed in a series of 21 cases. In all these cases the relief and pleasure of the patient and his family that the entire ordeal was over was impressive. Another favorable aspect was that when serious late complications occurred, or were present in one eye, the other eye had been operated upon and vision was maintained. In spite of the unfortunate condition in one eye, the patient's concern was lessened because he could still use the other.

When the fundus is not visible preoperatively and the operation reveals [illegible] [illegible], [illegible] [illegible] [illegible]

[illegible]

better after the operation than it was before. In such circumstances a patient is not easy to convince of the need for surgical intervention in the other eye. One patient, at the time of the first operation, revealed senile central degeneration. Although his vision was poor, he declined operation on the second eye until two years later. The visual result of the second operation was 20/20 with correction, but because of the unfortunate condition of the eye first operated upon, the patient had needlessly endured partial blindness for two years.

Unilateral extraction of cataract may cause diplopia, and the patient, if the eye not operated upon is the dominant eye, may refuse to wear glasses and complain bitterly of confusion and dipolpia. One patient learned to suppress vision in one eye, with the result that she had trouble in focusing and the eye turned inward. Finally, she and her family were convinced that the second eye should be operated upon, but a year passed before she could use both eyes together and overcome suppression.

After the success attained with cataract extractions performed a week apart, as well as four days apart, I was approached by a patient who insisted that the two cataracts be removed simultaneously. Because prevailing ophthalmologic opinions discouraged this procedure, the cataracts were removed at an interval of two days. The results were highly satisfactory. This encouraged me to perform binocular simultaneous cataract extractions.

Up to the time of writing 18 cataract operations have been performed for bilateral cataract one week apart; 3 extractions, four days apart; 2 operations, two days apart, and 21 bilateral extractions on the same day. The results in the last group compare favorably with those of monocular extractions.

Some of the objections to bilateral simultaneous extraction include the possibility of infection, postoperative complications and secondary complications, as well as systemic disease.

There is no reason why infection should be more prevalent in a binocular cataract extraction than in a monocular cataract extraction. The same aseptic conditions should prevail.

Postoperative complications may mean that both eyes will be lost, but there are cases on record proving that both eyes can be lost through similar complications, even though the cataract operations were performed after what was considered a suitable interval.

Secondary complications may not interfere with the eyes. For example, in one woman, five days after bilateral cataract extraction, acute suppurative parotitis developed on the left side. The eyes were treated only by cursory cleaning during her severe illness. Nevertheless, two months later all but one suture had fallen out, and corrected vision was 20/20 in both eyes.

Even old, debilitated and irrational patients may be benefited by simultaneous extraction of bilateral cataracts. In 1 case, with additional complication of bilateral glaucoma, neither postoperative bandages nor a mask could be applied. Nevertheless, recovery was uneventful, the glaucoma was controlled, and the patient was able to feed herself and to see with a +10.00 sphere.

Bilateral operations have also been successful in diabetic and hypertensive patients. In fact, if postoperative complications occur in one eye only, the patient is not so apprehensive, because the other eye is functioning. An example is the monocular development of a large hyphema, with complete filling of the anterior chamber, in a woman ten days after the operation. This patient had the use of her other eye, and knew only that one eye was "a little weak" after the operation. Three months after the hyphema occurred, the eye had 20/30 vision with correction.

Surgical Technic.—A brief outline of the surgical technic preferred in performing bilateral simultaneous cataract extraction is as follows: 1. Approximately 8 cc. of xylocaine with epinephrine is injected around each eye, the Van Lint technic being employed, and 1 cc. is injected retrobulbarly. To assure better akinesia, a few drops are also placed behind the insertion of the superior rectus muscle and a few drops into the lower fornix. Massage of the eyeball according to the Chandler method softens it sufficiently to eliminate the need of hyaluronidase.

2. A superior rectus stay suture (No. 4-0 silk) is placed.

3. A slight modification of the Park speculum is used.

4. A 4 mm. limbus hinged conjunctival flap is prepared.

5. A modified McLean groove incision is prepared 1 mm. behind the limbus, and five No. 6-0 silk preplaced corneoscleral sutures are inserted, the loops being left open.

6. The anterior chamber is opened with the keratome and scissors to 180 degrees.

7. Peripheral iridectomy is performed. A round pupil, whenever possible, is preferred.

8. The lens is grasped at 6 o'clock beneath a dilated iris with a Castroviejo forceps (cross action) and delivered intracapsularly by the tumbling technic.

9. The incision is cleansed, the iris reposited and the sutures drawn up and tightened. Five or six No. 6-0 silk sutures are used to insure tight closure of the conjunctiva.

10. The introduction of a large air bubble, when possible, is routine.

11. A dressing is applied postoperatively and removed the next day.

12. Routine postoperative treatment is prescribed. The patient may be allowed out of bed within one or two days and permitted to go home within five days, if he is eager to leave the hospital.

13. After six weeks, refraction is performed; +10.00 spheres are usually given at the first office visit, ten to fourteen days after the operation.

Reasons for a Bilateral Procedure.— The advantages of a bilateral extraction are as follows:

1. *Hospitalization:*
    - a. It decreases the time and cost by 50 per cent.
    - b. It removes the fear of a return trip to the hospital.
    - c. Old and debilitated persons are subjected to less confinement and relieved of a double operation.
2. *Vision:* The binocular procedure insures better vision:
    - a. When there is an undetected pathologic condition in one eye prior to operation, the fellow eye may give very good vision, or vision at least adequate to the patient's happiness.
    - b. Binocularity is maintained. There is no readjustment of visual patterns, first depending on monocular vision and then trying to achieve binocular vision when the second eye is operated upon at a later date.
    - c. Postoperative hyphema is less disturbing, especially in the diabetic patient, if the fellow eye continues to maintain vision.

Reasons for Not Attempting the Bilateral Procedure.—1. Bilateral cataract extraction should not be done by either a young or an older ophthalmologist until his technic is so well established that every

move has become second nature and he may proceed with exactness and speed from one eye to the other.

2. It should not be done under insurance plans unless the surgeon is willing to accept one-half the fee for the second eye.

RÉSUMÉ

L'auteur expose une série de cas d'extraction simultanée bilatérale de la cataracte. L'opération on a été pratiquée sur toutes les catégories de malades, sans tenir compte de leur état physique ni de complications éventuelles. Cette méthode a été couronnée de succès également dans les cas suivants: diabète, hypertension, insuffisance cardiaque, psychose, arthrite déformante. Le série de l'auteur comprend des malades âgés de plus de 90 ans et deux de moins de 50 ans (un de 32 ans, un de 98 ans).

La satisfaction des malades aussi bien que de leur famille s'est montrée des plus encourageantes. Les avantages et les désavantages de ce procédé sont analysés, et l'auteur exprime l'espoir que sa contribution encouragera davantage d'ophtalmolgistes expérimentés à tenter l'extraction simultanée bilatérale de la cataracte.

RESUMEN

Se trata de una serie de casos de extracción bilateral simultánea de cataractas. Tales operaciones han sido hechas en toda clase de enfermos independientemente de su estato físico o complicaciones. El autor ha operado sin más pegas que en los casos de cirugía monocular enfermos hipertensos y diabéticos, insuficientes cardíacos, enfermos mentales, con reumatismo deformante, enfermos de menos de 50 y de más de 90 (uno de 32 y otro de 98).

El bienestar y la satisfacción del enfermo y de sus familiares son de lo más compensadores. Se estudian los pros y los cantras del procedimiento. Es de esperar que este trabajo sirva de estímulo a los oftalmólogos experimentados para le práctica de la extracción simultánea de la cataracta bilateral.

RIASSUNTO

Viene presentata una serie di malati in cui fu eseguita la estrazione simultanea della cataratta. L'intervento è stato eseguito in pazienti di ogni tipo, senza riguardo per le condizioni fisiche o per le complicazioni. Si è ottenuto il successo in malati diabetici, in epertesi, in malati con insufficienza cardiaca, in psicotici, in artritici, in soggetti de oltre 90 anni (uno de 98) e in due di meno di 50.

Vengono elencati gli elemneti a favore e quelli contrari a questo metodo; si spera che il presente articolo spingerà gli oftalmologi a tentare l'estrazione bilaterale simultanea della cataratta.

SUMARIO

Apresenta uma serie de casos de extração simultanea bilateral de cataratas. Executa esta operação em todos os tipos de pacientes sem observancia das condições fisicas ou de complicações existentes. Os doentes hipertenose e diabeticos, com insuficiencia cardiaca, psicoses, artriticos, acima de90 anos e abaixo de 50 anos (2 casos) foram operados sem complicações o que não tem ocorrido pela pratica da cirurgia monocular.

Diz que o prazer experiementados pelos metodo. Acredita que este trabalho ira estimular os oculista mais experimentados a praticar a extração bilater simultane.

ZUSAMMENFASSUNG

Es wird über eine Reihe von Fällen berichtet, bei denen die gleichzeitige Entfernung eines doppelesitigen Kataraktes vorgenommen wurde. Die Operation er-

folgte an Kranken aller Art ohne Rücksicht auf ihren Körperzustand oder auf bestehende Komplikationen.

Diabetiker, Kranke mit hohem Blutdruck, mit Herzinsuffzienz, mit Psychosen, mit deformierder Arthritis, Kranke von über 90 und zwei von unter 50 Jahren (ein 32 jähriger und ein 98 jähriger) wurden erfolgreich operiert ohne Auftreten von Komplikationen, was von Eingriffen an einem Auge gewöhnlich nicht gesagt werden kann.

Die Erleichterung und die Freude des Kranken und der Familie waren äusserst ermutigend. Das Für und Wider des Verfahrens werden besprochen. Der Verfasser hofft, dass seine Arbeit die erfahreneren Ophtalmologen dazu anregen wird, die gleichzeitige Extraktion eines doppelseitigen Kataraks zu versuchen.

Evolutionary Progress in the Surgical Treatment of Middle Ear Deafness of Otosclerotic Origin

JULIUS LEMPERT, M.D., F.I.C.S.

NEW YORK CITY, NEW YORK

IN THE normal ear, air-borne sound pressure against the tense tympanic membrane, with the help of the ossicular chain, is transformed into a force acting on the stapes. The stapedial movements produce an increase of pressure on the perilymph and endolymph within the scala vestibuli of the cochlea. Therefore, the eardrum and the normal ossicular chain act as a pressure tranformer between the air and the fluid in the scala vestibuli of the of the cochlea.

Sound pressure in the external auditory canal sets the drum membrane into vibration. Its vibrations compress or dilate the air in the tympanic space, producing an alternating pressure that acts upon the oval window and the round window. In the normal ear, the force produced by the transmission through the ossicular chain is much greater than that produced by the alternating pressure within the tympanic space. There is also a time difference in the action of this force on the oval and on the round windows.

These differences, in sound pressure and in time, in the mobilization of the inner ear fluids, through the oval window on the vestibular side of the basilar membrane, and in the mobilization of the inner ear fluids through the round window on the tympanic side of the basilar membrane, put the basilar membrane into the most effective vibratory state for the transmission of air-borne sound to the cochlear nerve.

One can understand the movements in the cochlea by comparing it to a U-shaped tube filled with fluid, with the openings covered by membranes of varying stiffness. The stiffer membrane represents the oval window and the softer membrane the round window. Displacements of the fluids (perilymph and endolymph) within the U-tube correspond to displacements of a section of the basilar membrane. In such a U-tube, movements of the fluids will be produced only if the pressures acting on the windows differ either in size or in phase. In the normal ear a difference in pressure between the two windows is produced by the ossicular chain acting with increased force upon the stapedial footplate. On the other hand, the sound pressure acting upon the round window membrane is decreased in comparison with the sound pressure in the external auditory canal acting upon the eardrum. This decrease in pressure is caused by the fact that the sound pressure cannot immediately act upon the round window membrane but has to be transmitted through the tympanic membrane and tympanic space to reach it. It is this difference between the pressures upon the fluids of the

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From the Lempert Institute of Otology and Lempert Research Foundation, Inc.

Read at a meeting of the Northeastern Regional Division, United States Section, International College of Surgeons, Manchester, Vermont, July 3, 1958.

Submitted for publication Jan. 15, 1959.

scala vestibuli and the scala tympani which enables air-borne sound to produce the movements of the basilar membrane.

In middle ear deafness secondary to otosclerosis, the mobility of the stapes footplate is decreased because of progressive stapedial footplate ankylosis. To go back to the analogy of the U-tube, closure of one opening will immobilize the whole fluid column in the tube because the fluid has no elasticity. A similar situation within the cochlea is produced by ankylosis. This interference with the mobilization of the fluids within the scala vestibuli by air-borne sound, in the presence of normally mobilizable fluids within the scala tympani of the cochlea, is sufficient to prevent the necessary vibratory state of the basilar membrane that is essential for hearing normally-voiced speech.

Any surgical technic for improvement of hearing in a person with middle ear deafness secondary to stapedial ankylosis of otosclerotic origin should be designed to effect remobilization of the inner ear fluid and should fulfill two important conditions: 1. It should provide means for predicting preoperatively, in each individual case, the possibility of restoring hearing to the 30-decibel level or higher in the three speech frequencies. Improvement of hearing to at least that level is essential if the need for a hearing aid is to be avoided. 2. It must be planned so that the progressively growing otosclerotic tumor within the region of the oval window will no longer affect the newly established mobility of the inner ear fluids.

> *From its inception, the progressive development of the Lempert surgical procedure for improvement of hearing when deafness is of otosclerotic origin has been based on this principle: Any surgical technic for improvement of hearing in patients with middle ear deafness secondary to stapedial ankylosis should be designed to effect remobilization of the fluids of the inner ear.*
>
> *The historical background of the fenestration operation is surveyed; evolution of the Lempert-Fenestra Nov-Ovalis operation is traced. The most effective means and methods of accomplishing remobilization of the fluids of the inner ear are described in detail. These include placement of the new fenestra (to replace the otosclerotically impeded oval window) outside the middle ear in the widest part of the dome of the vestibule; use of the cupola technic to avoid producing bone dust and the necessity for its removal; control of every bleeding point as it occurs; use of the invagination technic to insure permanent patency of the new fenestra; in effect, physicoanatomic reconstruction of the inner and middle ear and the external auditory canal, to produce the phase difference essential for remobilization of the fluids of the inner ear.*

A survey of progress in surgical technics for improvement of hearing in the presence of middle ear hearing loss of otosclerotic origin properly begins with the surgical efforts of great otologists of the closing decades of the nineteenth century.

In 1876 Kessel, after some animal experimentation, pointed out that if the ankylosed stapediovestibular joint could be mobilized without disrupting the ossicular chain, the hearing in that ear should improve. In the next dozen years, a number of other prominent otologists of the day attempted mobilization of the ankylosed stapes in otosclerosis.

The first report of an [illegible] of

cases of stapes mobilization came from Boucheron in 1888, the operation being described as "separation of the incus from the stapes; excision of the posterior half of the tympanic membrane; mobilization of the stapes by gentle traction by means of a hook; moving the stapes back and forth and up and down by traction on the stapedial muscle; and in some cases, removal of the malleus and incus." This author said that favorable results might be obtained in early stages of ankylosis, but if bony ankylosis and involvement of the "sound perceiving" apparatus were present, "it is too late to operate."

In 1890, in France, Miot reported on 126 cases of attempted mobilization of the stapes and described the technic of his operation in minute detail. "After opening the tympanum, pressure is exerted on the incudo-stapedial articulation by a special 'palette,' the pressure being made gently and repeated several times. If this is not successful in mobilizing the stapes, the instrument is withdrawn and reintroduced against the anterior border of the large branch of the incus, immediately above the incudo-stapedial articulation, and pressure made so as to draw the stapes somewhat out of the oval window. If it is immobile, the malleus also may be mobilized." Miot reported, "In cases of long standing . . . if these cases are rapidly progressive, the results of the operation are slight. Surgery gives the best results when the ankylosis is in its beginning stage."

In 1894, Dr. Frederick L. Jack reported his experiences with attempted mobilization of the stapes. He said, "Most operations for mobilizing the stapes or freeing the oval window must be looked upon as largely experimental," and "in many cases a fracture of the crura occurs at the time of attempted expulsion, leaving the base plate."

In 1898, a different approach to the problem was made by Alderton. After failing to obtain hearing improvement with catheterization, he next tried cutting the stapedius tendon. He then removed the incus through a perforation in the tympanic membrane. A further operation was later tried for removal of the stapes, but in this attempt the crura came away, leaving the footplate behind. In a final operation on the same patient a hole was drilled through the stapedial footplate with a guarded trephine.

Alderton described this case in a paper entitled, "Trephining of the Stapedial Footplate for Otitis Media Sclerosa," which he read at the Thirty-first Annual Meeting of the American Otological Society, held in New London in July 1898. The conclusion of the paper read:

> "Apparently in otitis media sclerosa, nothing permanent is gained by the attempt to remove or break through the foot-plate of the stapes, and although nothing disastrous is to be looked for as the result of such an attempt, yet the writer, as the result of his experience, would counsel against the operation."

Alderton read a second paper at that meeting, followed by a discussion in which Doctors Blake, and Jack took part, with Dr. E. A. Crockett of Boston, also participating. Commenting on Dr. Alderton's statement that if interference with the stapes apparently did not promise much benefit, it apparently would not do harm, Dr. Crockett said:

"I happen to have had two cases in which total deafness resulted, where the patient heard ordinary voices (at three feet) before the operation . . . In one the usual incision in the drum-head was made and the incus disarticulated without trouble; but immediately following the cutting of the stapedius muscle, which could be plainly seen, the patient exclaimed that he could hear nothing. I tested him immediately and found that he was almost totally deaf to all sounds. I am sure no injury was done to the stapes; it could be plainly seen and was perfectly movable. The operation was continued and the stapes removed. This patient had had only a very slight tinnitus before the operation; but within a few hours a very loud pulsating tinnitus began which continues to the present day. The hearing loss was permanent. In the second case the experience was similar. I believe the process in this case to have been a hemorrhage into the labyrinth; perhaps from a rupture of capillaries at the moment the labyrinthine pressure is relieved by the interference with the stapes. I am decidedly of the opinion that no form of middle ear operation is free from danger of a permanent decrease of hearing."

In 1900, the nineteenth century trials of surgical treatment of otitic "sclerosis" were brought to a temporary end when Siebenmann wrote: "All clinical experience with endeavors at mobilization of the stapes is useless. Not only useless," he said, but "often even harmful since the fixation of the stapes in cases of 'progressive spongiosity' takes place by ossification of the periosteum. The periosteal ossification is generally directly produced and maintained by irritations of the periosteum. Avulsion of the stapes is no more successful."

Thus the early attempts to obtain hearing improvement in the presence of otosclerosis failed in several ways: 1. Activation of the ankylosed stapediovestibular joint failed to permanently remobilize the fluids of the inner ear, because these early attempts were based on no definitely prescribed means for liberating the ankylosed joint without disrupting the ossicular chain. 2. No means had been found of predicting preoperatively the possibility of improving the hearing. 3. Even in those

ization of this joint the pioneers in this type of surgery did not succeed in developing definite procedures for prevention of reankylosis of the stapediovestibular joint in order to maintain permanently the newly obtained endolymph mobility. After 1900 there is little or no mention in the literature of attempts to improve hearing by mobilization or extraction of the stapes.

The next surgical principles put forward by the otologists of the day belong to the history of the fenestration operation. About 1910 Barany made known his observation that an opening made within the external semicircular canal in the presence of good cochlear nerve function (evidenced by good hearing through bone conduction) *always resulted in an immediate hearing improvement*. Other otologists of the day confirmed the phenomenon: that fistulization of the labyrinth—even the minutest opening—provides hearing improvement in cases of stapedial ankylosis of otosclerotic origin. This principle was proved physically and physiologically correct. Thus immediate improvement of hearing, through fistulization of the external semicircular canal, became predictable in advance.

Thereafter the research problem had two aspects: (1) finding ways and means for obtaining the optimum degree of hearing improvement that could be expected in every case, and (2) devising methods for maintaining continuously and permanently the improvement first obtained. This research was persistently and tirelessly pursued, mainly by Holmgren, by Sourdille and by me. Our efforts culminated successfully with my development of the present universally employed, successful, one-stage Fenestra Nov-Ovalis technic. This technic (1) makes it possible to predict both the successful creation of the physico-anatomic conditions needed for remobilizing the in-

100 per cent of cases of stapediovestibular ankylosis; and (2) prescribes methods for prevention of subsequent recurrence of impediment to the mobility of these fluids, in 95 per cent of the patients successfully operated on.

This technic has withstood the test of time. The surgical principles on which it is based provide a method for consecutive, consistent and successful restoration of serviceable hearing and permanent maintenance of the improved hearing, in ears deafened by ankylosis of the stapediovestibular joint, of otosclerotic origin.

More fully described, the guiding principles on which the Fenestra Nov-Ovalis procedure is based are:

1. The overall procedure includes means of predicting preoperatively the possibility of surgically improving the hearing for air-borne sound (by surgically mobilizing the fluids of the inner ear) to at least the 30-decibel level, in the 512, 1024 and 2048 frequencies, the speech frequencies. The ability to hear at these levels, which should be evident immediately, on the operating table, is necessary for practical, serviceable, unaided hearing acuity.

2. The surgical technic employed is capable of restoring practical serviceable hearing in a given ear no matter how low the preoperative audiometric reading for air-borne sound happens to be for the three speech frequencies, so long as the masked bone-conduction hearing for pure tone in these frequencies has not fallen below the 20-decibel level.

3. The technic employed incorporates definitely prescribed, time-proved means for deliberately conserving and permanently maintaining the hearing newly regained by the operation despite the continuity of growth and spread of the otosclerotic tumor.

The operative procedure—designed to permit accomplishment of the foregoing objectives—has two major aspects. 1. The technic must create a new vestibular window to replace the covered oval window within the middle ear, where hearing has been impeded by the otosclerotic lesion. To achieve this it must be placed *outside* the middle ear, where it will be beyond the area to which the progressively growing otosclerotic tumor has been known to spread. This is one factor that helps to insure the permanent patency of the new fenestra. 2. It must provide means for covering the new vestibular window. The functional importance of this is of particular concern, since an uncovered vestibular window not only may jeopardize the patient's cochlear nerve function, but it may give rise to postoperative labyrinthine infection secondary to middle ear infection. The result of such infection can be fatal.

It is of great acoustical importance to place the new vestibular fenestra outside the middle ear and to cover and seal it off without leaving any direct connection between the middle ear and the new vestibular window. This increases the sound pressure difference between the round cochlear window and the surgically created vestibular window. In this way the sound pressure acting upon the intratympanic cochlear window is relatively less than the sound pressure acting on the newly created extratympanic vestibular window.

A more detailed consideration of the necessary physico-anatomical reconstruction of the middle and outer ear involves:

1. *The Creation of a New Vestibular Fenestra to Replace the Functionally Impeded Ossicular Chain and Oval Window.*—For the effective channeling of air-borne sound pressure through the perilymph and endolymph within the scala vestibuli of the cochlea toward the basilar membrane, a new fenestra is created outside the tympanic cavity in the surgical dome of the vestibule.

The new vestibular fenestra should be made as wide as possible. It is a well-established fact that neither the length nor the width of the fenestra created has any bearing upon the degree of hearing improvement immediately obtainable upon penetrating the osseous wall of the external semicircular canal and prior to covering the opening with the membranous flap. Even a pinpoint perforation communicating with the perilymph space will result immediately in the highest degree of hearing improvement possible in a given ear. Since, however, such a fenestra necessarily must be covered and sealed with a cutaneous membrane for the protection of the membranous endolymphatic labyrinth, the degree of hearing improvement obtained under such circumstances will depend upon: (a) the width of the newly created fenestra; (b) the shape of the fenestra; (c) the flexibility of the portion of the flap covering the fenestra region; (d) the thickness of this portion of the flap. Since all these interdependent factors, both individually and collectively, will influence the degree of resistance to air- borne sound pressure offered by the covered and sealed newly created fenestra, I found that a wide, round vestibular fenestra covered and sealed with the most flexible and thinnest periosteum-lined portion of the tympanomeatal flap will result in the most effective remobilization of the inner ear fluids.

This is also an important reason why the fenestra should be made in the surgical dome of the vestibule where the perilymph space is widest, instead of within the narrow portion of the external semicircular canal posterior to the ampulla, wherein a fenestra wide enough for this purpose cannot be made.

The best improvement of hearing is obtained when the fenestra is made not only as wide as possible but as round as possible, provided the area of the window in both instances is the same. This is best accomplished by maintaining the usual length of the fenestra and widening the fenestra area laterally, on both sides, until it is converted into a round opening. A round window is also less likely to close than is is an oval window, in which the walls are obviously closer together. A round fenestra covered with the membranous flap is least resistant to sound pressure and therefore can permit and maintain the maximum improvement in hearing afforded by the status of the cochlear nerve function.

If one employs the cupola technic and thus avoids pulverization of the endosteal bony layer of the labyrinthine capsule, loss of bone-dust and bone slivers within the perilymph space, commonly resulting from the use of the pulverization technic, is avoided. Perilymphatic osteogenesis, which is incorrectable, is thereby prevented. The cupola technic also prevents injury to the membranous labyrinth, which can result from attempts to retrieve bone splinters lost within the perilymph space. The cupola technic likewise reduces the frequency and severity of postoperative serous labyrinthitis by eliminating the trauma the membranous labyrinth is subjected to in attempts to retrieve bone chips which may enter the perilymph space when the pulverization technic is used. The cupola technic obviates injury to the perilymphatic trabeculae, with bleeding into the perilymph space, which can result in perilymphatic fibrosis and thus prevent the necessary remobilization of the inner ear fluids for the improvement of hearing.

Irrigation and suction must be avoided after opening the perilymph space in order to prevent postoperative inflammatory reaction of the membranous labyrinth, which is responsible for postoperative temporary vertigo and recruitment. This can be accomplished only by using the cupola technic for creating the fenestra, whereby the cupola is removed intact and irrigation is unnecessary, whereas in the pulverization technic irrigation is essential for removing bone dust from the perilymph space of the newly created fenestra. The membranous labyrinth will fare best when left to bathe in its own vestibular perilymph.

The fenestra nov-ovalis must be sealed with the intact tympanomeatal flap in order to retain the perilymph and prevent subsequent degeneration of the membranous endolymphatic labyrinth. Its importance lies mainly in conserving the hearing improvement that immediately follows the creation of the labyrinthine fenestra. The tympanomeatal membrane for sealing the fenestra nov-ovalis has been proved best, physico-anatomically, physiologically and biologically for reaching the desired goal with fenestration of the vestibular labyrinth.

Neither the creation and opening of the fenestra nor the covering and sealing of the newly created fenestra with the tympanomeatal flap should ever be conducted in the presence of even the slightest bleeding. The minutest bleeding point observed within the membranous and bony tissues must be controlled. The entrance of blood into perilymph space can readily result in fibrosis within this space, with resulting immobilization of the perilymph and endolymph by air-borne sound. Furthermore, neither the most meticulous control of bleeding during fenestration nor the covering and sealing of the fenestra with the tympanomeatal flap in the presence of an absolutely dry, bloodless field is a guarantee that bleeding from the inner surface of the tympanomeatal flap into the perilymph space will not take place postoperatively when the surgically trimmed, thinned-out meatal portion of the tympanomeatal flap is used for covering and sealing the fenestra gap. It is for this reason that the flap must be plastically so created that its thinnest untrimmed portion nearest to the tympanic membrane, with its intact periosteum-lined surface, will reach, cover and seal the fenestra. Only thus can postoperative bleeding into the perilymph space from the inner surface of the flap be prevented. Such postoperative bleeding may not only prevent the improvement of hearing but may even result in a greater hearing loss. To facilitate the use of this part of the tympanomeatal flap in covering the fenestra, the fenestra must be made as far forward on the surgical dome of the vestibule as possible and as close to the facial canal on the anterior wall of the vestibular dome as possible.

This thinnest portion of the flap, when employed to cover the new fenestra, serves best the immediate remobilization of the inner ear fluids of the cochlea, because it is also the most flexible portion. It also serves best to maintain this mobilization of these fluids, because its periosteum-lined inner surface, having remained intact and surgically unharmed, does not undergo fibrotic changes, and thus it continuously maintains its original flexibility for air-borne sound pressure. If, however, the tympanomeatal flap is poorly constructed and only the thick portion thereof can be made to reach and cover the fenestra, it is best not to trim its inner periosteal surface in order that it may maintain its flexibility. Use of the thick portion, however, whenever possible, should be avoided. Since the size of the fenestra is generally uniform, the mobility of the portion of the flap covering the window will decrease rapidly if the thickness of the flap is increased. This is true even if the mechanical properties of the tissues, whether the flap is thin or thick, remain the same.

To prevent osteogenetic repair from

taking place postoperatively, with ultimate osteogenetic closure of the newly created fenestra and consequent loss of hearing gain, the portion of the tympanomeatal flap facing the fenestra must be invaginated into the fenestra gap sufficiently to come into contact with and become adherent to the fenestral rim margins.

Although it is true that the creation of a new vestibular fenestra to replace a functionally impeded oval window resulting from stapedial footplate fixation secondary to otosclerosis will, in the absence of cochlear nerve damage, immediately improve the hearing in a given ear. The permanent maintenance of this hearing cannot be deliberately achieved without the correct use and aid of the all-important flap.

In 1938 I advanced the theory that invagination into the fenestra gap of the portion of the tympanomeatal flap which covers the newly created fenestra, so that it adheres to the bony fenestra rim, will prevent osteogenetic closure of the fenestra. This theory, reiterated in 1945 and proved in 1950, has withstood the test of time. For the first time in the history of the fenestration operation it has become possible deliberately, consistently and consecutively to prevent osteogenetic closure of the newly created fenestra in the surgical dome of the vestibule.

2. *The Physico-Anatomic Reconstruction of the Middle Ear.*—In order to remobilize the inner fluids of an otosclerotic ear and put the basilar membrane into the most effective vibratory state after the fenestration operation, it is necessary to create a phase or intensity difference between the forces acting on both window membranes. This is accomplished best by the following steps: (a) Disruption of the functionally impeded ossicular chain by removal of the incus, which is done in order to free the tympanic membrane from the incumbrance of the ossicular chain and thus prevent interference (by the remaining, partially mobilizable stapes) with the movements of the inner ear fluids produced by the newly created vestibular fenestra; and (b) the sealing of the tympanic air space with the intact tympanic membrane that forms a portion of the intact tympanomeatal flap, in order to isolate the tympanic air space from the newly created vestibular fenestra. To accomplish this most successfully it is necessary to resect the head and neck of the malleus.

The sealing of the tympanic air-space and its isolation from the newly created extratympanic fenestra are essential to the effective remobilization of the inner ear fluids within the scala tympani of the cochlea through the round window membrane. The intensity of the air-borne sound pressure against the tympanic portion of the tympanomeatal flap sealing the tympanic cavity is the same as that of the sound pressure against the meatal portion of the flap sealing the newly created vestibular fenestra. This pressure is nevertheless considerably weakened by the time it reaches the round window membrane in its course from the tympanic membrane through the air-filled tympanic cavity and round window niche. The difference in the magnitude and phase of the sound pressure through the vestibular and cochlear windows is essential to obtain the vibratory state of the basilar membrane most effective for the improvement of hearing in patients with clinical otosclerosis. Thus the tympanomeatal flap, when properly made and used to seal off and separate the newly created extratympanic vestibular fenestra and the tympanic air space harboring the round cochlear intratympanic fenestra plays a most important role in the remobilization of the inner ear fluids necessary for the restoration of hearing to a serviceable level.

The importance of the correct surgical

construction of the tympanomeatal flap and its correct placement to seal both the new fenestra and the tympanic air-space can be readily understood when one observes that the hearing is not improved if a tympanomeatal flap is incorrectly fitted and placed so that the tympanic air-space is not rendered air-tight. A leakage of air from the tympanic cavity, whether it be from a poorly sealed tympanic space or from a perforation, no matter how small, within the tympanic portion of this flap, will not only prevent the improvement of hearing but may even increase the hearing loss. A taut, tense and intact tympanic membrane is needed to provide the essential pressure difference between the two windows. When the flap is placed so that the tympanic membrane is not tightly stretched and stiffened, its resistance to sound pressure will not be adequate to decrease the pressure against the round window membrane sufficiently to create the necessary difference in sound pressure between the two windows.

3. *The Physico-Anatomic Reconstruction of the External Auditory Canal.*—Results obtainable from fenestration indicate that it is advisable to permit the direct and simultaneous approach of air-borne sound pressure to both the covered and sealed new vestibular extratympanic fenestra and to the covered and sealed reconstructed tympanic air-space. It is essential to render the new vestibular fenestra as readily approachable by air-borne sound pressure through the external auditory canal as is the reconstructed covered and sealed tympanic air space. This is accomplished by endaural exteriorization of the extratympanic fenestra nov-ovalis. Such exteriorization comprises removal of the entire posterior wall of the external auditory canal, which widens its inner aspect and exposes to direct view and approach, through the widened external auditory canal, both the tympanic membrane covering the tympanic cavity and the meatal cutaneous portion of the tympanomeatal flap covering the newly created extratympanic vestibular fenestra. As a result of such exteriorization of the fenestra nov-ovalis, the air-borne sound pressure that reaches both the covering of the tympanic air space and the covering of the fenestra nov-ovalis is equal in intensity and time. Since the inner surface of the portion of the flap which covers the newly created fenestra lies in direct contact with the perilymph and the endolymphatic labyrinth, however, the sound pressure striking it mobilizes the inner ear fluids within the scala vestibuli of the cochlea without loss of intensity or time; whereas the sound pressure against the outer surface of the tympanic membrane, being separated from the cochlear perilymph and endolymph by the tympanic round window membrane, reaches the round window membrane to mobilize the inner ear fluids within the scala tympani of the cochlea with a loss of energy and a loss of time. It is this difference, between the moments when the displacements of the vestibular and cochlear fluids by sound energy reach their maximum, which is the essential factor for putting the basilar membrane into the vibratory state needed for the improvement of hearing in middle ear deafness secondary to otosclerosis. If the sound pressure reaches both the new vestibular window and the cochlear round window with equal intensity and in equal time, the basilar membrane cannot be put into a vibratory state.

When every step in the physico-anatomic reconstruction of the external middle and inner ear, essential to the remobilization of the inner ear fluids, is meticulously and successfully executed by the otologist, it should result in improvement of hearing commensurate with the degree of cochlear nerve function existing in the given ear. The test of time has proved my physically explainable, planned technic to be correct and universally acceptable.

If, in the presence of good cochlear nerve function, the air-conduction hearing is not improved, or if it fails to reach the height expected after the fenestration operation, it must be concluded that the physico-anatomic reconstruction was faulty—even though the fault may not be evident to the surgeon. Adequate remobilization of the inner ear fluids was not accomplished. The fenestra nov-ovalis operation is a most exacting surgical technic, requiring the most meticulous attention to all the factors influencing air-borne sound pressure.

Wever and Lawrence have experimentally confirmed my theory that the improvement of hearing following the fenestration operation is dependent upon successful remobilization of the fluids of the inner ear. They state, "The fenestration operation, as we have seen, effects a remobilization of the cochlear fluid."

The time-proved Fenestra Nov-Ovalis technic is to date the only technic that meets every one of the aforementioned requirements for successfully restoring and permanently maintaining hearing in the presence of clinical otosclerosis. This technic renders the successful creation of the physico-anatomic conditions needed for remobilizing the inner ear fluids by air-borne sound predictable preoperatively in 100 per cent of cases of stapediovestibular ankylosis of otosclerotic origin. It also renders predictable the permanent maintenance of the physico-anatomic state needed to prevent the recurrence of impediment to the mobility of these fluids. It is for this reason only that this technic has been universally adopted and employed successfully for the past nineteen years, for the restoration of serviceable hearing in cases of clinical otosclerosis, by otologists with special training in modern temporal bone surgery.

RESUMEN

El desarrollo progresivo de la técnica quirúrgica de Lempert para la mejoría de la audición cuando le sordera es de origen otoesclerótico se basa en el princpio siguiente: toda técnica guirúrgica para mejorar la audición en enfermos con sordera del oído medio consecutiva a anquilosis estapedia debe tener como fin la movilización de los líquidos del oído interno.

Se pasa revisión al fundamento histórico de la fenestración y se delínea la operación de Lempert. Se describen en detalle los métodos más efectivos 1 para movilización de los fluídos intraauditivos. Se incluye entre estos la prática de una nueva ventana para reemplazar la oval lesionada por la otoesclerosis y que se practica en la parte externa del oído medio y la porción más ancha de la cúpula del vestíbulo; trabajo sobre la cúpula para evitar el polvillo óseo; control de cada punto que sangre; técnica de la invaginación para asegurar la utilidad permanente de la nueva fenestra; en fin, re construcción fisico-anatómica de los oídos medio e interno y del canal auditivo externo para lograr una buena remobilización de los liquidos del oído interno.

ZUSAMMENFASSUNG

Die fortschreitende Entwicklung des Lempertschen chirurgischen Verfahrens zur Verbesserung des Hörvermögens bei otosklerotischer Taubheit beruht seit den ersten Anfängen der Lempertschen Arbeit auf dem Grundsatz, dass jede chirurgische Technik zur Behandlung der Hörfähigkeit von Kranken mit Mittelohrtaubheit als Folge von Steigbügelversteifung darauf ausgehen muss, die Flüssigkeiten des inneren Ohres zu remobilisieren.

Es wird ein Überblick über den ge-

schichtlichen Hintergrund der Fensterungsoperation und über die Entwicklung der Lempertschen Fenestra-Nov-Ovalis Operation gegeben. Die wirksamsten Mittel und Wege zur Erzielung einer Remobilisierung der Flüssigkeiten des inneren Ohres werden im einzelnen beschrieben. Dazu gehören die Einsetzung des das otosklerotisch veränderte ovale Fenster ersetzenden neuen Fensters ausserhalb des Mittelohres in den weitesten Teil der Kuppel des Vestibüls, die Anwendung der Kuppeltechnik zur Vermeidung der Entstehung von Knochenstaub und der Notwendigkeit seiner Entfernung, die Versorgung jedes auftretenden Blutungspunktes, die Anwendung der Invaginationstechnik zur Sicherstellung eines dauernden Offenbleibens des neuen Fensters, d.h. in der Tat die physikalisch-anatomische Wiederherstellung des inneren Ohres, des Mittelohres und des äusseren Gehörkanals, um die zur Remobilisierung der Flüssigkeiten des inneren Ohrs wesentliche Phasendifferenz zu schaffen.

RÉSUMÉ

Dès le début de on application la technique de Lempert pour l'amélioration de l'ouíe dans les cas de surdité par otosclérose a été basée sur le principe suivant: toute technique chirurgicale destinée à améliorer l'ouïe des malades atteints de surdité de l'oreille moyenne consécutive à une ankylose de l'étrier devrait viser à la remobilisation des liquides de l'oreille interne.

L'auteur presente un aperçh des origines de la fénestration et décrit l'évolution de la technique dite de Lempert ("Lempert Fenestration Nov-Ovalis Operation"). Il expose les méthodes les plus efficaces de remobilisation des liquides de l'oreille interne, qui comprennent les techniques suivantes: création d'une nouvelle fenêtre replaçant la fenêtre remplçante la fenêtre ovale sclérosée au-delà de l'oreille moyenne dans la partie la plus large du dôme vestibulaire; application de la technique cupolaire permettant d'eviter d'éliminer la formation de "poussière osseuse"; contrôle immédiat des points de saignement; utilisation de la technique d'invaginnation afin de garantir le bon fonctionnement permanent de la nouvelle fenêtre; en fait: reconstruction physique et anatomique de l'oreille interne et moyenne et du conduit auditif externe, en vue d'obtenir la phase différentielle indispensable à la remobilisation des liquides de l'oreille interne.

RIASSUNTO

Il procedimento chirurgico di Lempert per le sorditâ di origine otosclerotica è basato sul seguente principio: ogni tecnica chirurgica dretta a migliorare l'udito nei malati con sordità da orecchio medio secondaria ad anchilosi della staffa deve essere diretta a mobilizzare i liquidi dell'orecchio interno.

Vengono ricordati i principi storici dell'intervento di fenestrazione e l'evoluzione dell'intervento di Lempert. Il mezzo piú efficace per ottenere la rimobilizzazione dei fluidi nell'orecchio interno è rappresentato dalla apertura di una nuova finestra per sostitutire quella ovale inutilizzata dall'otosclerosi, all'esterno dell' orecchio medio nella parte più ampia del vestibolo. Viene descritto l'uso di una particolare tecnica per evitare la formazione di polvere ossea, che deve essere asportata, e per controllare ogni punto sanguinante, e l'uso della tecnica di invaginazione per assicurare la pervietà della neofinestra; la ricostruzione fiscioanatomica del'orecchio interno e medio e quella del condotto uditivo esterno consentono di rimobilizzare i fluidi nell'orecchio interno.

Les Kystes Hydatiques du Foie Ouverts dans les Voies Biliaires

(Hydatid Cysts of the Liver Opening into the Biliary Ducts)

PEDRO L. CERESETO, M.D., F.I.C.S.

TANDIL, ARGENTINA

This complication, encountered in 10 per cent of the author's cases, causes numerous functional disorders of the liver, which can be fetal. The author discusses the differential diagnosis, the biologic and radiologic diagnosis, the evolution of the condition and the clinical picture. The most important point in his report is his explanation of the mechanism of rupture of the cyst into the bile duct.

Spontaneous cure is extremely rare; the patients, when they survive, remain weak, with many distressing symptoms (attacks of fever, chills, etc.)

The only possible method of treatment is surgical excision of the cyst and exploration of the bile duct. The author reports several cases of this complication.

L'HOMME est l'hôte intermédiare dans l'évolution d'un ver qui est dans l'intestin du chien et qui produit dans l'être humain une formation larvaire kystique, maladie très répandue dans quelques pays éleveurs d'Europe, l'Amérique du Sud, d'Afrique du Nord et d'Australie.

Ce parasite, leténia échinocoque, qui n'a pas plus de deux millimètres de longueur, quand il est amené au systême digestif par la contamination des aliments ou par les mains qui ont été en contact avec les déjections du chien, est mis en liberté dans l'intestin, s'il n'a pas été détruit par le suc gastrique, entre dans le torrent circulatoire, suivant les veines intestinales. C'est alors que le premier organe qui offre une barrière au progrès de l'embryon est le foie, dont l'énorme masse constitue la localisation la plus fréquente de cette maladie après le foie, c'est le poumon, l'organe que choisit le parasite comme lieu de formation vésiculaire de cette affection qui reçoit le nom de "échinococose ou hydatidosis".

Dans le foie, l'embryon hexacante forme une vésicule avec un contenu cristallin qui se nourrit aux dépens de l'hôte et, dans sa croissance, il va déplaçant les tissus de l'organe parasité et les englobant. Mais pendant cette évolution, le parasite, en grandissant, peut lésionner les organes voisins et s'ouvrir dans les cavités péritonéales, pleurales et donner ainsi l'origine

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Read at the First Annual Congress of the European Federation, International College of Surgeons, Brussels, May 15-18, 1958.

Submitted for publication Nov. 9, 1958.

à de graves complications. Mais celle que nous traiterons ici, c'est celle qui survient quand le parasite, dans sa croissance, lésionne et perfore les conduits billiaires à l'intérieur de la masse hépatique, originant un tableau clinique très caractéristique et de grande gravité, que nous désignerons sous le nom de "kyste hydatique du foie ouvert dans les voies biliaires".

Pour être une complication fréquente: 10%des cas parasités dans le foie; par son indubitable gravité et par les heureux résultats qu'une thérapeutique appropriée peut proportionner, nous considérons que nous devons soumettre ce thème à la considération de cet important Congrès.

Nous avons eu l'opportunité de soigner et de traiter sept patients qui présentaient cette complication et c'est à la base de cette expérience que nous devons présenter ce travail, les caractéristiques les plus éclatantes du procès et les conclusions que ces observations nous ont proportionné.

Tableau Clinique.—Les symptômes que présente le patient qui supporte une échinococosis hépatique, sont habituellement très modérés et très souvent c'est seulement la présence d'une tumeur hépatique qui retient l'attention du malade; à tout cela, on cela, on peut adouter: sensation de plénitude gastrique, dyspepsie et très rarement l'urticaire.

Quand le kyste établit la communication avec les voies biliaires, il survient des manifestations très claires qui, difficilement, passent inaperçues par le patient. Ce sont: la colique hépatique de plus grande on moindre intensité, en raison dircte de la quantité de luquide et vésicules hydatidiques qui entrent dans la lumière biliare; urticaire, par l'absortion du liquide hydatidique, maériel allergisant. A cela se joint plus tard la présence d'une ictérie intermittente de plus grande ou moindre gravité, relationné directement aux crises d'élimination par le cholédoque de vésicules et des restes hydatidiques.

A mesure que le temps passe, à ce tableau s'ajoute l'infection du contenu biliaire et apparaissent les frissons et la fièvre.

Finalement le présence de vésicules dans les déjections (hydatidenterie) ou dans les vomissements (hydatidemesis) sont des symptômes d'indubitable certitude quand on les trouve.

Le tableau de ces malades par ce qu'on vient d'expliquer, très similaire au tableau d'une lithiasis cholédocienne infectée et c'est avec elle qu'il est nécessaire d'établir le plus souvent le diagnostic différentiel.

Dans le diagnostic de cette affection, comme dans celui de la complication que nous étudions, ce qui est de la plus grande importance, c'est la présence de cette infestation dans le domicile du malade ou dans lieu d'origine.

La prolixe anamnésie, le tableau clinique et l'aide que proportionnent les études radiologiques, directes ou au moyen de contrastes (colangiographies), ainsi que les preuves biologiques (réaction de Cassoni Imaz Lorentz) l'étude des déjections ou le sondage duodénal, contribuent à effectuer le diagnosticbavec certitude.

Evolution et Pronostic.—Cette complication de l' "échinococose" hépatique livrée à sa propre évolution, offre le tableau d'une maladie incurable, aggravée par de fréquentes crises fébriles et d'ictéricie qui peuvent provoquer la mort du patient par "angiocolitis" ou la formation de multiples abcès hépatiques ou aussi à une cirrhose. La guérison spontanée peut être faite seulement lorsqu'il s'agit d'un petit kyste dont la germinative est évacuée à l'extérieur dans sa totalité. Dans l'enquête que j'ai réalisée entre de nombreux chirurgiens de mon pays et de l'étranger, j'ai trouvé seulement deux cas de propable guérison spontanée par le mécanisme cité.

Mecanisme de l'Ouverture du Kyste Dans les Voies Biliaires.—A mesure que le kyste croit, l'organe parasité, dans ce cas, le foie, forme aux dépens de son tissu conjonctif une enveloppe propre, membrane adventice ou périkystique, laquelle englobe ou obstrue les petits vases et capillaires qu'il trouve pendant son développement.

Au contraire, quand il trouve un capillaire biliaire ou un conduit plus gros, celuici est déplacé et parafois perforé et ainsi mis en communication avec la lumière du conduit bibilaire et la cavité adventicielle. Cette communication peut rester sans lésionner la germinative une période de temps, mais la germinative peu à peu s'insinue dans la lumière du conduit jusqu' à ce que la pression de la vésicule termine par la faire éclater et ainsi verse son contenu dans les conduits biliaires. L'orifice de la perforation est en accord au calibre du conduit: plus grand est l'orifice, plus grande est la quantité de liquide et de vésicules qui entrent dans l'arbre biliaire, et plus francs les symptômes qu'elle produit (coliques, ictéricies).

Si la perforation du kyste se fait dans un petit conduit biliaire, ce qui arrive de plus probable c'est l'infection du kyste, mais il est difficile que par là il s'élimine à l'extérieur. Le kyste s'infecte par les germes amenés par la voie canaliculaire et donne les symptômes dun kyste suppuré.

Traitement.—L'indication dans le traitement de l' "échinococose" hépatique est chirurgicale: évacuation du kyste et de ses membranes. Avec plus de raison, si une complication s'ést établie comme l'est l'ouverture dans les voies biliaires. Dans ce cas, à l'extirpation du kyste doit s'ajouter l'évacuation des éléments hydatidiques des voies biliaires et son drainage. En peu de mots, on doit effectuer dans le même acte chirurgical deux interventions: 1° l'évacuation du qyste; 2° le drainage des voies biliaires. Celle-ci est l'opération correcte et celle qui offrira une guérison plus rapide au patient. Mais il arrive que dans quelques cas, on opère le patient avec le diagnostic d'ictéricie mécanique ou ictéricie obstructive et le diagnostic étiologique n'ayant pas été fait avec un malade dans de mauvaises conditions, on l'opère. Le chirurgien peut se voir dans la nécessité de réaliser une unique intervention d'urgence, comme serait l'évacuation du kyste ou—dans le cas de ne pas l'avoir découvert—le drainage du cholédoque. Mais, autant l'une comme l'autre opération ne peut assurer la guérison complète du procès, et on doit réaliser la deuxième intervention si la guérison du procès tarde quelque peu à se manifester. La voie d'abordage le plus convenable est celle qui permet d'explorer la plus grande quantité de surface hépatique et contrant la même sur le kyste, nous donne le champ suffisant pour réaliser l'exploration des voies biliaires. Ceci est généralement possible quand le kyste est d'evolution abdominale, plus difficile quand il est d'évolution supérieure ou thoracique, ayant besoin dans ce cas d'incisions thoraco-abdominales, mais avec la condition si c'est possible d'éviter l'ouverture du fond de sac pleura.

Le contrôle radiologique durant l'operation—ou dans le post-opératoire des voies biliaires—la vigilance des drainages permettront au chirurgien de s'assurer de l'évacuation complète des restes parasitares, et déterminer le moment de l'extraction du tube de Kehr ou les drainage du kyste.

Seuls peuvent se considérer exemptés de l'opération, ces patients qui après l'épisode initial, n'ont pas de symptômes et apparement ont réalisé lévacuation totale du parasite, ceux qui étant porteurs d'un Q.A.V.B. présentent en même temps des lésions d'une telle gravité qu'elles contreindiquant l'opération (tumeurs malignes, insuffisance cardiaque grave, etc. . . . .)

Casuistique.— Nous avons dû traiter sept patients atteints de cette maladie. Six d'entre eux furent opérés avec une ou deux opérations; l'un d'eux ne put l'être car son apparence démontrait qu'il était guéri mais il souffrait d'une autre maladie.

Tous les malades opérés guérirent de leur affection, quelques uns d'entre eux avec un jost-opératoire de plusieurs semaines ou mois, en raison de leur affection avancée ou de l'ancienneté de leur complication, qu'ils supportaient sans traitement jusqu' à ce moment-là.

Le moyen le plus recommandable pour accélérer la guérison de ces patients est l'importance fondamentale d'un traitement médical antibiotique approprié, ainsi que l'attention personnelle du chirurgien contrôlant les tubes d'écoulement et la sûreté d'un drainage adéquat.

RÉSUMÉ

Cette complication (10% des cas de l'auteur) provoque de nombreux troubles de la fonction hépatique pouvent entraîner une issue fatale. L'auteur en discute le diagnostic différentiel, le diagnostic biologique et radiologique et l'évolution. Le point le plus intéressant de son rapport est constitué par l'explication du mécanisme de rupture des kyste.

La puérison spontanée est extrêmement rare; les malades non traités restent affiablis, avec des accès de fiès et de frissons, ainsi que divers autres symptômes.

Lt chirurgie est la seule thérapeutique indiquée: extirpation du kyste avec exploration du cholédoque.

Editors' Note: An addendum to the monograph *Early French Surgery* by Dr. G. Kasten Tallmadge of Marquette University, which was presented as a lecture in the first series at the International Surgeons' Hall of Fame and appeared as an editorial in the February issue of the Journal, regrettably reached us too late to be included in that issue. We take pleasure in presenting it below.

Historical Note.—Together with Dr. Iago Galdston, of the New York Academy of Medicine, and others, and with members of the Jesuit Community of Marquette University, I have been seeking the original source of the doctrine, *Ecclesia abhorret a sanguine*. It appears that this never was a written statement of principle, but was an unwritten expression of a general position of the Church or some of its members.

—*G. Kasten Tallmadge, A.M., M.D., Ph.D.*

Sección en Español

Palidotomia en el Tratamiento de Algunas Disquienesias: Tecnica Personal

(Pallidotomy in the Treatment of Various Dyskinesias: Personal Technic)

MANUEL M. VELASCO-SUÁREZ, M.D.[*]
MEXICO D. F., MEXICO

The author has developed a technic of his own for pallidotomy, which he employs in treating various types of dyskinesia. The operation is usually performed with the operative region under local anesthesia, the position of the cannula being controlled roentgenographically. The instruments employed are shown in a line drawing, as is the precise field of operation. Control roentgenograms are also presented. Electromicrographs and cinematigraphs are also taken preoperatively and postoperatively.

El tratamiento médico poco eficaz para corregir los movimientos involuntarios anormales, el temblor y los trastornos del tono muscular, viene determinando la necesidad de buscar no sólo nuevas drogas sino también la posibilidad de corregir, o por lo menos moderar, los temblores parkinsonianos y los complejos desórdenes de movimiento comunes en las coreas, en la degeneración hepatolenticular, enfermedad de Wilson, pseudo esclerosis, distonía lnticular, degeneración palidal progresiva, atetosis y algunas mioclonias.

En realidad, las distintas disquinesias que ocurren en las afecciones señaladas nos recuerdan la primitiva expresión de Strümpell de "complejo sintomático amiostático", como resultado de un trastorno funcional o estructural de una, varias o muchas de las conexiones entre los ganglios basales.

Los componentes clínicos de estos síndromes dependen de la unidad anatómica, funcionalmente más comprometida en la facilitación o inhibicción de diferentes impulsos que figuran en el mecanismo regulador de la actividad motora en distintos niveles (corteza, estriado, tálamo, pálido, núcleo rojo, cuerpo de Luys, tracto dentatorubro, sistema frontopontocerebeloso, sistema de Deiters . . .).

Brevemente conviene recordar las salientes fisiológicas fundamentales para el movimiento, de las estructuras señaladas:

El *Estriatum* es un centro de regulación de la expresión facial, de los movimientos reactivos ante el susto, el miedo y en la defensa. Controla los movimientos de autoprotección contra el dolor, regulando cambios automáticos posturales y, además, parece ejercer funciones sobre el *efecto regulador palidal del tono muscular.*

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[*] Profesor de Clinica Quirurgica (Sistema Nervioso) Universidad de Mexico.

Submitted for publication July 9, 1957.

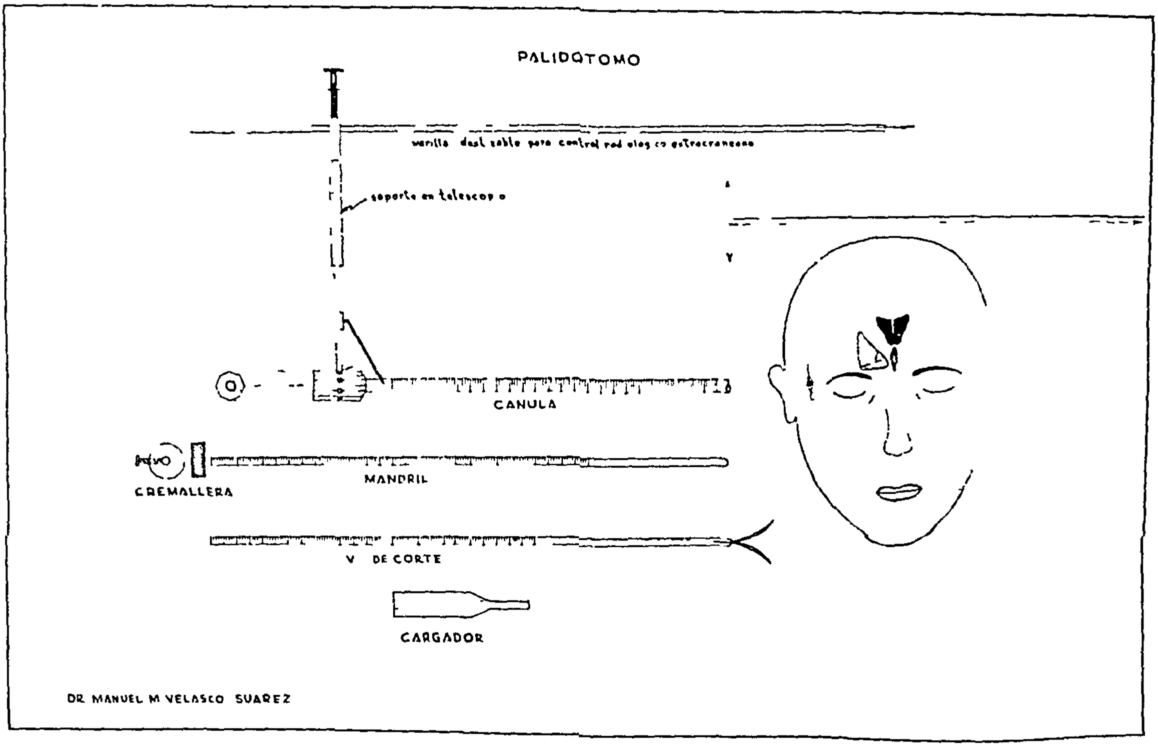
PALIDOTOMO
varilla doble para control radiologico extracraneano
soporte en telescopio
CANULA
CREMALLERA
MANDRIL
V DE CORTE
CARGADOR
DR. MANUEL M VELASCO SUAREZ

Fig. 1.

El *Pallidum*, que en el recién nacido es el centro primitivo del automatismo incoordinado, se convierte en el adulto en el centro de las sinergias motoras, de grupos musculares individualizados y de grandes o pequeños segmentos de las extremidades. Controla no sólo la regulación sinérgica que sobre el sistema motor ejercen los centros autonómicos del cerebelo y tronco cerebral, sino también aquellos actos motores automáticos para los que el estriatum es un importante moderador. Esta cooperación funcional y el importante papel que juega el pallidum en el mecanismo de la regulación del tono, ha constituido uno de los factores para que en los temblores y desórdenes de movimiento se le suponga al globus pallidus una actividad facilitadora del trastorno motor, convirtiéndose por hoy en uno de los atractivos quirúrgicos para controlar algunas disquinesias.

El *cuerpo de Luys* seria el centro sinérgico de la coordinación cerebelosa.

La *substancia negra* es considerada como un centro de control del tono estático y un regulador en el órden de los movimientos sucesivos. (La problemática significación de la melanina en esta estructura ganglionar quizás encierre alguno de los secretos relacionados con ciertos aspectos de las disquinesias.)

Por fin, recordemos que la integración funcional del *sistema extrapiramidal*, depende de la integridad funcional del cerebelo, cerebro medio, tronco cerebral, tálamo y corteza.

El *cerebelo*, con sus núcleos y conexiones estabiliza por entero el sistema de la coordinación corporal y lleva a la corteza cerebral la información de los cambios que ocurren en la posición del cuerpo y en el tono de la musculatura corporal. Esta "información" es llevada por el sistema rubro-dentado (dentorubro) al tálamo y, de aquí, a la corteza cerebral y a los centros extrapiramidales. Las funciones optimas de este sistema se alcanzan sólo cuando el tálamo es un centro activo como estación receptora de estímulos propioceptivos y exteroceptivos. Es un órgano relacionado necesariamente con el tono afectivo que informa al individuo no sólo de los más discretos cambios somáticos, sino también de su relación con el mundo exterior y sus conexiones con la corteza cerebral son de la mayor significación para la conciencia de la sensibilidad somestésica y del acto motor; con el hipotálamo encuentra también significación fisiológica en la regulación central del tono muscular.

La fisiología patológica de los desórdenes motores que nos ocupan se manifestará clínicamente por aquinesia, hipoquinesia, alteraciones del tono muscular, hiperquinesia,—temblor, sacudidas, movimientos distónicos y combinaciones de varios de estos fenómenos, cuya explicación sujeta a revisiones, podrá justificar el ataque quirúrgico de una o varias de las estructuras mencionadas.

Desde principios de este siglo se han hecho intentos operatorios para corregir el temblor y los movimientos involuntarios de los miembros, algunos con resultados estimulantes, otros son resultados absolutamente nulos; pero, la realidad actual ha comprobado que desde que Spiegel y Wycis (1947) abordaron el blobus pallidus por métodos esterotáxicos, estimularon la búsqueda de procedimientos más sencillos para atacar este núcleo en la práctica neurológica para controlar algunas disquinesias.

Sin olvidar el valor inicial de los trabajos de Meyers (1942) quien interrumpió las vías palidales al través de una operación transventricular que logró modificar el temblor, creemos que han sido Fenelón, Guiot, Narabayashi y Okuma (1953) y Cooper y Poloukhine (1954-55), los que han trabajado con inyecciones de novocaína o alcohol o electrocoagulación sobre las estructuras del pallidus, deseando controlar principalmente el temblor parkinsoniano.

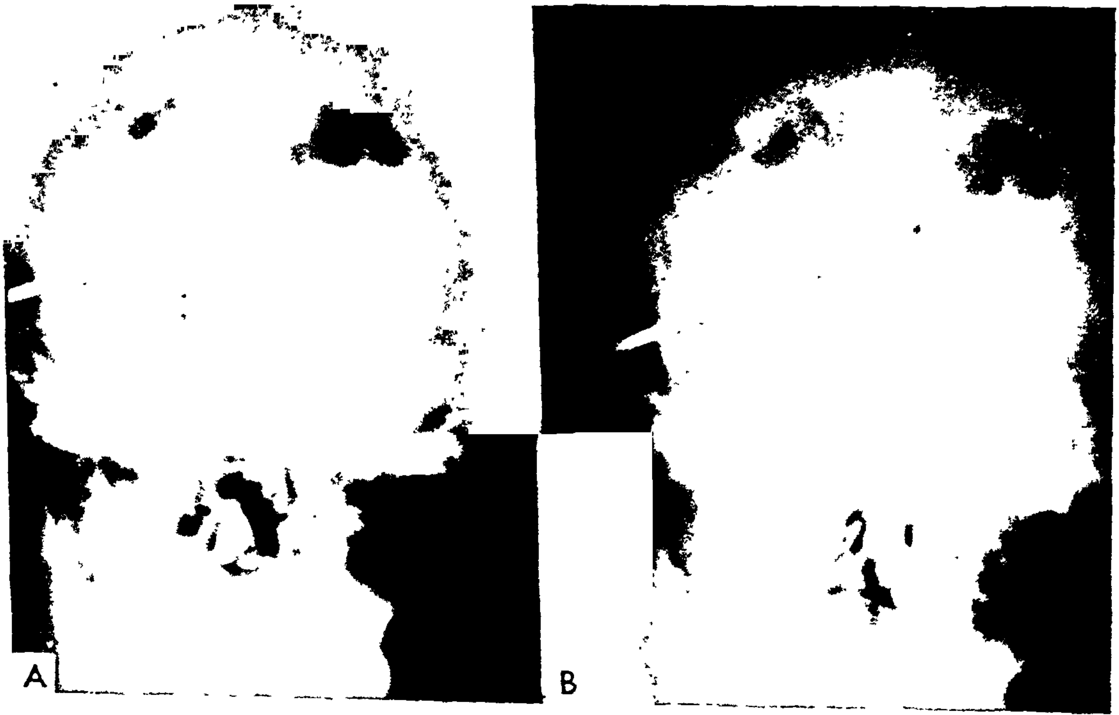

Fig. 2.

Después de hacer algunos intentos de novocainización y alcoholización señalados también por Fairman y Givré sobre el globus pallidus, con resultados fugaces, o alentadores pero no sin compromiso de difusión para la cápsula interna y otras estructuras de vecindad, resolvimos practicar la sección del globus pallidus, de acuerdo con las medidas estereotáxicas de Spiegel y Wycis, y tomando también en consideración las referencias de Cooper.

Nos pareció entonces que el plano frontal más aceptables que uno debe buscar para atacar el globus palidus, es aquel que señalan Spiegel y Wycis a 30 mms. por *delante de la glándula pineal y el plano* horizontal que pasa a 5 mm. por arriba de la comisura anterior en el atlas de los mismos autores (Figs. 29 y 69) ; pero ante la imposibilidad de contar siempre con la glándula pineal calcificada y visible a los rayos X, la búsqueda de la masa intermedia hacia el centro de la imágen pneumográfica del III ventrículo nos ha facilitado este propósito.

Hemos encontrado que un trépano temporal practicado a 4 cms. por detrás del arco orbitario externo y a 3 cms. por encima del cigoma, permite el acceso de una cánula al través del giro temporal superior, pasando por la parte inferior de la ínsula en dirección de la porción media de la imágen del III ventrículo, logra alcanzar el globus pallidus en un mesocéfalo a 5 cms. de la corteza cerebral y a 1 cm. de la linea media.

La cánula adaptada primero de un leucotomo de Freeman y Watts y después diseñada especialmente por nosotros (Fig. 1) permite substituir su mandrín romo por otro que lleva en la punta una muelle doble que se abre al terminar la canula en forma de abanico cuya abertura puede graduarse desde afuera insertándola más o menos de 0.5 a 1 cm. en cada brazo u hoja de la muelle.

La intervención se practica siempre bajo anestesia local y una vez insertada la radiografía anteroposterior y otra lateral canula se controla su posición por una (Fig. 2, *A* and *B*) escogiendo un plano coronal, a 14 cms. por arriba del nasion, que señalamos con una "diadema" de plástico lucite perforado a distintas alturas pero con una referencia especial para el trépano señalado y, en el lado opuesto, a 11 cms. de la linea media aplicamos un clip de plata en cuero cabelludo que nos servirá de orientación en el avance de la cánula. Cuando consideramos que el instrumento está en su posición y profundidad correctas, comprobamos cuidadosamente la no existencia de hemorragia y realizamos la exploración de la capacidad motora en los miembros contralaterales ya que la lesión de la cápsula internal podría ser responsable desde luego de disminución de la fuerza muscular. Ante la mayor seguridad posible de tener la punta de nuestra cánula en el espesor mismo del globus pallidus (probablemente en la emergencia inferior de las fibrillas palidofugales) inyectamos 0.5 cc de una solución de novocaína al 1.5% ; si logramos de una manera impresionanate la disminución del temblor, hacemos pasar por la cánula el instrumento que con sus muelles cortantes se abrirá en el extremo (ahora en el pálido) de la misma, medio centímetro para realizar el primer corte por el movimiento rotatorio del instrumento y, de no conseguir con este corte la cesación de los movimientos, hacemos protruir medio centímetro más las muelles que, por nuevos movimientos de rotación del instrumento ampliarán al doble el plano de sección en el aspecto anteroposterior del globus pallidus.

En uno de nuestros casos bastó la simple inserción de la cánula llevada hasta el lugar señalado, para suspender espectacularmente el temblor en un hemiparkinsonismo.

En otro de nuestros pacientes, la novocaína inyectada y aun el alcohol regresaban por la cánula como por encontrar estructuras tan endurecidas (marmóreas) que no permitían la infiltración de estos líquidos. El corte en este paciente nos dió la sensación de dureza y discreta crepitación con la disminución consecutiva inmediata del temblor.

Con objeto de tener la mayor seguridad posible, respecto de la posición de la punta de nuestra cánula en el globus pallidus y de la profundidad que habrán de alcanzar las muelles cortantes, antes de practicar el corte usamos un electrodo de profundidad, cuya punta esférica no aislada se pasa de 0.5 a 1 cm. de la profundidad alcanzada por la cánula, hacemos un registro electroencefalográfico, cuyas ondas lentas (una a tres por segundo) nos han parecido características del trazado de actividad del ganglio basal, que no logramos cuando el electrodo está en cápsula interna.

A mayor abundamiento, antes de retirar el electrodo lo usamos también para estimulación eléctrica con la onda cuadrada daba un cronaxímetro, de 0.5 a 5 voltios con frecuencias de medio segundo con duración de D. I sig. — Si se obtienen respuestas motoras rítmicas contralaterales en ambos miembros, por estímulo sobre la cápsula interna, retiramos aproximadamente de ¼ a ½ cm. la cánula con el electrodo, hasta no obtener esta respuesta y es entonces cuando inyectamos de ½ a 1 cc. de novocaína al 1.5%. Si el temblor cede, practicamos el corte y retirado el instrumento cortante dejamos la cánula en su sitio 2 a 3 minutos con objeto de comprobar si hay o no hemorragia; enseguida retiramos lentamente la cánula—En algunos de nuestros casos, como escurriera sangre, inyectamos 2.5 cc. de suero fisiológico en varias ocasiones hasta que el suero regresó por la cánula menos teñido.

Es importante controlar la fuerza muscular y capacidad de movimientos durante la realización del corte (Hemos observado que se frecuente que aparezca un signo de Babinski inmadiatamente después de la operación y muy discreta paresia que desaparece en las primeras 24 hs.).

CONCLUSIONES

Nuestra casuística de sólo 5 casos nos ha enseñado que el procedimiento no deja de tener riesgos particularmente para la capacidad motora integral de los miembros contralaterales, principalmente para el miembro inferior. En uno de nuestros casos hemos tenido que lamentar una monoparesia inferior que no ha regresado en 5 meses; en los 4 casos restantes hamos observado la aparición del signo de Babinski y hemiparesia transitoria. Uno de nuestros casos no parkinsoniano, con hemibalismo severo consecutivo a un accidente vascular hipertensivo, se benefició espectacularmente con la intervención, pero los movimientos para el miembro superior volvieron a aparecer al tercer día de la operación, aun cuando con menos intensidad; un segundo intento operatorio — sin previo registro electrográfico ni estímulo, produjo hemiparesia contralateral transitoria y estupor y un cuadro confusional de 8 días de duración, al cabo de los cuales la paciente estuvo libre de movimientos desordenados pero con hemiparesia que, a medida que iba cediendo, dejaba su lugar a los movimientos involuntarios. 21 días después, su hemibalismo vuelve a estar presente y como prefiere la paresia previa a los movimientos desordenados, resolvemos hacer quimopalidolisis usando 1 cc. de alcohol absoluto con fenol al 1%. Inmadiatamente de inyectada la substancia ceden los movimientos, hay hemiparesia progresiva que se convierte en hemiplegia media hora después. La enferma se queja de cefalea intensa. Ocho horas después se hace PL encontrando tensión inicial de 100 mm (Raq. de agua). En las siguientes 24 hs. la enferma dice sentirse mejor pero está manifiestamente confusa y con tendencia al sopor. Cuarenta y ocho horas después, se inicia un estado semicomatoso que termina con el fallecimiento de la enferma al cuarto día de la inyección.

En nuestro primer enfermo, un adulto de 67 años, escogido para esta intervención que hemos descrito, el temblor parkinsoniano en el hemicuerpo izquierdo cedió instantáneamente cuando la cánula estuvo a la profundidad en que suponíamos encontrar el globus pallidus y, sin corte mayor, el enfermo estuvo libre de su disquinesia hasta 26 días después en que desgraciadamente falleció por un proceso neumónico.—*La autopsia en este caso nos comprobó la* lesión del globus pallidus en su porción más inferior.

En los otros dos casos hemos obtenido la cesación inmediata y espectacular del temblor con ligerísima hemiparesia que ha regresado totalmente en 48 o 72 hs.

En todos nuestros casos hemos observado muy considerable disminución y casi desaparición de la rigidez postural y de movimiento.

No han ocurrido trastornos del lenguaje, pero sí hemos observado cierta tendencia a la vervigeración en las 24 hs. consecutivas a la intervención.

Trastornos del sueño con somnolencia y estupor en dos de nuestros casos y en uno de ellos insomnio de 24 hs. a pesar de hipnóticos y ataráxicos.

Hasta la fecha hemos escogido pacientes que requieren intervención de un solo lado.

Creemos que de practicarse la operación en ambos lados debe dejarse transcurrir un mes o más para la realización de la segunda.

Los mejores resultados los hemos obtenido en el control del temblor.

En el caso hemibalismo descrito, creemos que la disquinesia fué substituida por hemiparesia a causa de lesión de la cápsula interna y que el accidente fatal por la inyección de alcohol-fenol se debió a la difusión del mismo de la vecindad de estructuras diencefálicas.

Creemos que la palidotomía constituye una esperanza segura en el tratamiento sintomático de algunas disquinesias, sin afectar la movilidad voluntaria y reduciendo considerablemente el temblor.

NOTA.—En el control de nuestros enfermos, además de todas las pruebas clínicas, hacemos trazos electromiográficos y cinematográficos pre y post operatorios.

Nuestra experiencia con esta intervención es de 13 meses y hemos podido comprobar que si hay esbozo de temblor nunca representa más del 10% del preoperatorio y que *nuestros pacientes han estado siempre* satisfechos de los resultados obtenidos.

Nos complace saber que el Dr. Obrador en Madrid, realiza una intervención semejante. A los casos señalados podemos ya agregar el de otra enferma recientemente operada, con temblor parkinsoniano, postencefalítico bilateral, de más de 20 años de evolución en la que hemos operado sobre el lado derecho controlando de inmediato el temblor contralateral izquierdo.

Con objeto de tener mejor control del área lesionada en el pallidum, últimamente estamos dejando la mitad de un clip de plata de Mackensie, antes de retirar la cánula.

Adendum: Cuando esta comunicación se publica (Feb., 1959) el autor ha operado a 31 enfermos afectados de Parkinsonismo uni o bilateral, con espectacular mejoria en el 70%, beneficio aceptable en el 20%, mejoria fugäz y recidiva temprana en 5% y complicaciones incapacitantes y mortales en 5%. En dos pacientes más con disquinesia coreiforme y severo hemibalismo los resultados no han sido muy satisfactorios. En estos se ha intentado tambien el ataque quirurgico, con el mismo instrumental, del nucleo rojo y del nucleo v.l. del tálamo.

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Most of us are so familiar with the dangers of delay in acute surgical conditions, that we run very little risk of falling into the error of procrastination. We have been taught to recognize the emergency that requires prompt action, to make our decisions quickly, and to carry them out expeditiously. It is not often, however, that we allow our minds to dwell on the reverse side of the picture, the advantage of delay. Yet it cannot be too strongly insisted that the first point a surgeon should consider is whether any operation is required at all, whether "do nothing" is not the best advice in the interest of the patient. Operating has become so easy, and its implements and procedures so standardized, that most men when they leave hospital are quite capable of performing a large number of operations safely and well at a time when their surgical judgment is yet immature. With experience, the responsibility for deciding whether operation is the best form of treatment comes to assume first place: the choice of operation becomes a subsidiary question.

The last twenty years have seen many diseases and many parts of the body, which were formerly immune from surgical interference, brought within the scope of operation. They have also witnessed a general reconsideration of values. It has been realized that in many conditions, where treatment by operation was formerly the rule, the resulting advantage which accrues to the patient is not enough to counterbalance the pain and the risk.

—*Ogilvie*

Editorial

The History of Anesthesia

The Early Days

MAX S. SADOVE, M.D., F.I.C.S.,* AND LESTER SCHWARTZ, M.D.**

CHICAGO, ILLINOIS

During the forthcoming months of 1959 and as long thereafter as possible, the editorial pages of the Journal of the International College of Surgeons *will be occupied by presentations of rare and extraordinary historic value, the lectures presented at the International Surgeons' Hall of Fame on medical and surgical history from the earliest recorded achievements to those of our own times. We believe that* Journal *readers who were not able to attend the lectures will find them as exciting as did the audiences present at their delivery. The story of progress in the healing arts and the giants of medicine and surgery to whom we owe the amazing brilliance and scope of modern achievement is intrinsically thrilling and is a vital part of the education of every cultivated man and woman, inside or outside the profession. It is altogether fitting that it should appear in these pages, since the International College of Surgeons is first, last and always a teaching institution.*

WITH THE eating of the apple from the Tree of Life, man began to accumulate knowledge to relieve the pain that besieged him. This knowledge, however, was woefully inadequate. Though many old stories of ancient times tell us of many potion brews and inhalants, and of many drugs, each when carefully studied shows that though a few may have blunted pain to some slight extent, none was adequate to relieve severe pain. Some, especially those concocted with wine or similar spirits, may have produced sleep or some degree of stupor, yet none was adequate for surgical anesthesia, nor could any of them have been used repeatedly without danger of poisoning. By far the majority of these portions have been studied and found devoid of any real analgesic effects.

One of the early attempts to produce analgesia was made by the Assyrians, who advocated compressing the carotid arteries for the production of unconsciousness. As herbs were investigated, the soporific properties of opium and hemp were used in India. These two drugs were analgesics, but not anesthetic without danger of poisoning. Pliny the Elder, in 79 A.D., described the use of mandragora. Later the Greek physicians combined mandragora with wine and called it morion. Though this drug was the subject of many papers and the essence of many remedies of the Middle Ages, it is devoid of real analgesic properties.

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*Professor of Surgery (Anesthesiology) and Head of the Division of Anesthesiology, University of Illinois College of Medicine and the Research and Educational Hospitals.

**Clinical Instructor, University of Illinois College of Medicine and the Research and Educational Hospitals.

Submitted for publication Nov. 23, 1958.

The earliest references to inhalation anesthesia was contained in the works of Herodotus. He described the burning of a peculiar kind of hemp, resembling hasheesh, and the inhalation of these fumes. In ancient times the fumes of several hypnotic sponges were inhaled. Hugh of Lucca, in the thirteenth century, described many such soporific sponges made with opioids. Even Guy de Chauliac, whose textbook ranked first in the Middle Ages, recommended the inhalation of narcotics. Needless to say, none was effective, except that the vehicle may have been volatile and caused some psychic depression, especially if such a substance as alcohol was employed.

Other physical attempts to alleviate pain include the use of snow and ice, applied locally. This was recommended by Avicenna (979 to 1030 A.D.). James Moore, a famous English surgeon, published a monograph in 1784 entitled "A Method of Preventing or Diminishing Pain in Several Operations of Trunk Surgery." This method consisted of the use of clamplike devices applied to the nerve trunk areas of the extremity upon which the operation was being performed.

In 1779 Frederick A. Mesmer introduced the art of hypnosis, which became known as "messmerism." He believed that the body had an "animal magnetism" and that this could be controlled, to the alleviation of pain. In the British Isles James Esdaile, John Elliotson and James Byrd carried on the mesmeric technic, and, though some operations were performed with the aid of hypnosis administered by Esdaile, this technic never acquired a large group of supporters.

The age of modern inhalants began in 1540, when Valerius Cordius, a German, described the properties of sweet vitriol. Paracelsus, in the same country, even hinted at its use. In 1730 Frobonius renamed diethyl, calling it "ether." Prior to this time it was known as sweet vitriol. The word "ether" is derived from the Greek "aithĕr" through the Latin "aether," both words meaning "air."

One of the earliest contributors to modern inhalation anesthesia was Joseph Priestly. He was born near Leeds, England, of strict Calvinistic parents. His educational training was intended to equip him for the ministry. At the age of twenty-two he became a minister and a teacher of languages. After meeting Benjamin Franklin in London, his interest in chemistry was spurred. He then built a laboratory and embarked on research. He was enchanted by the gas that bubbled from the beer baths that were located near his church. This was found to be the same gas that was prepared by Joseph—carbon dioxide.

In 1772, while in his laboratory at Calne, he treated damped iron filings with nitrous acid, and upon heating them found nitrous oxide. He had to leave England because of his religious beliefs, and fled to Northern Giland, Pennsylvania. He also isolated oxygen, and is considered the father of modern anesthesia because of these important basic discoveries.

The application of inhalants for the alleviation of pain was undoubtedly aided by the work of Sir Humphrey Davy. He was born of poor parents in England, and was "discovered" in Penzance about 1797. Later he became the superintendent of the institution at Clifton, which was a stepping-stone to his becoming the head of Beddows Pneumatic Institute, the important seat of learning and treatment of his day.

In April 1799 Davy began inhaling nitrous oxide which was considered a poison by many, and this took this gas out of the class of "contagions." (Portraits of Davy and Beddows in *Triumph Over Pain*, pp. 80-81.) Davy wrote about the intensification of auditory and visual reception in the analgesic state produced with nitrous oxide without loss of consciousness. In 1801 Davy resigned the post of superintendent of the Pneumatic Institute and became a lecturer in chemistry and director of the Chemical Laboratory at the Royal Institute. Unfortunately, Davy did not perfect the surgical use of nitrous oxide, although he did suggest that it might prove useful for this purpose.

Henry Hill Hickman (portrait in *Triumph Over Pain*, p. 112) was born on Jan. 27, 1800, in a Shropshire village. He was among the first to describe and recommend the production of the anesthetic state of unconsciousness. At the age of twenty, after much study, he became a member of both the Royal College of Surgeons and the Royal Medical Society of Asbury. On Feb. 21, 1824, he wrote his famous letter to Mr. T. A. Knight of Downton Castle near Ludlow, a prominent member of the Royal Society. In this letter he recommended using carbonic acid gas in surgical practice, and described his experiments on animals. In Hickman's opinion these animals were not asphyxiated, but were really in a state of suspended animation. Although Mr. Knight seems to have encouraged Hickman to publish his letters and experiences in the form of a pamphlet, he made no attempt to convince his colleagues of the Royal Society of its importance. After waiting three years, Hickman, in April 1838, decided to present his case to Charles, King of France. His letter of Aug. 31, 1838, was forwarded to the Royal Academy of Medicine and was read at a meeting of the Medical Section on September 28. A committee was appointed to study Hickman's claims, but nothing was done about it. Hickman returned to England, and a short time later, on April 5, 1830, died at the age of 30. He was buried at Burnsfield. Hickman's experiments on animals are undoubtedly among the first successful uses of anesthesia for surgical operations on animals. His works were carefully documented and presented. It is sad that his choice of an agent was carbon dioxide, and also that no one followed his lead to its logical conclusion by applying a modification of his technic to man.

Demonstrations of nitrous oxide inhalation were very common during the early nineteenth century. One of the lecturers of that era was Gardner Quincy Colton, whose early demonstrations set the stage for Wells' discovery of the anesthetic properties of the gas.

Gardner Quincy Colton was born in Vermont in 1814. Because of monetary embarrassment, he had to leave school and become an apprentice chairmaker. Later, he came to continue his trade in New York, where his brother aided him in entering the College of Physicians and Surgeons in 1842. He left school two years later, because of financial difficulties, and became a public lecturer. On Dec. 10, 1844, while Colton was in Hartford, Connecticut, one of the participants of his nitrous oxide inhaling exhibitions sustained a contusion hematoma and felt no pain. Wells, being present at the demonstration, was impressed and decided to try the use of nitrous oxide in his practice.

During the "Gold Rush" in 1849, Colton became attracted to the West. In California he became a Justice of the Peace. In later years Colton became a wealthy man. Unfortunately, after his return to the East his wealth disappeared, and in 1863 he began administering nitrous oxide again.

While Colton was on tour he met J. H. Smith, a dentist from New Haven, Connecticut, and served as his anesthetist for the demonstration of nitrous oxide. Colton opened the first office of the Colton Dental

Association in New York City, employing Dr. John Allen as dentist. Colton's fame and fortune as a painless extractor of teeth grew fabulously and he became wealthy again.

Horace Wells (portrait in *Triumph Over Pain,* p. 126) was born on Jan. 21, 1815, at Hartford, in Windsor County, Vermont. He descended from an aristocratic New England stock and consequently was able to attend many famous private schools. He studied dentistry in Boston and in 1834, at the age of 19, began his predental study. After studying two years he moved to Hartford and built a lucrative practice. He discussed the possibility of preventing surgical pain with colleagues on several occasions.

During the years from 1841 to 1843 he had several students, among whom were John M. Riggs and William T. G. Morton. On Dec. 10, 1844, he witnessed Colton's demonstration of nitrous oxide and was impressed. The next day he requested John M. Riggs, dentist, to extract one of his molars while he, Wells, was under the influence of nitrous oxide. After administering it in turn to many dental patients, he approached Dr. Warren of Massachusetts General Hospital and requested an opportunity to demonstrate its uses by administering surgical anesthesia. Unfortunately, this demonstration failed because of inadequate depth of the anesthesia. Although the patient had no memory of the painful episode and really was in an analgesic plane, the audience, because of his outcry, came to the conclusion that the demonstration was a failure.

Nevertheless, there can be little doubt that this man played an important role in the discovery of surgical anesthesia. The fact that Morton saw his teacher, Wells, anesthetize a patient for extraction cannot be denied. That he induced anesthesia for many extractions and taught his art to many also cannot be denied. That he had his own tooth extracted first is not to be denied. There would have been no debate about priority had his public demonstration of nitrous oxide been successful, and it could have been successful had more premedication or deeper anesthesia been utilized. Surgical anesthesia in its strictest sense was given to the world by Morton; but anesthesia for dentistry, at least, was given to the world by Wells, and in about 1862 was again popularized by Colton.

Crawford Williamson Long (portrait in *Triumph Over Pain,* p. 15) was born on Nov. 1, 1815, in Danielsville, Georgia. Although Crawford Williamson Long was the earliest well-known documented user of ether for the alleviation of pain, his failure to publicize his work kept the importance thereof from being fully recognized. Long first entered Franklin College at Athens, Georgia. He read medicine under Dr. George Grant of Jefferson, Georgia. Later, in 1836, he matriculated with the medical department of Transylvania University at Lexington, Kentucky, and in 1838 transferred to the University of Pennsylvania, where he first learned of ether. In 1838 and 1839 he observed the effects of ether at first hand, on some of his colleagues who were inhaling it for amusement. In 1839 he spent eighteen months "walking" the hospitals of New York. In 1841, when he had completed his studies, he went back to Georgia and located in Jefferson. Jefferson, like many small towns in the United States, was a site of ether frolics, and one of Long's student friends, James V. Venerable, had frequented many such frolics. While under the influence of ether he sustained injuries without suffering pain. Long convinced Mr. Venerable that he should have two small tumors on the nape of the neck excised while under ether anesthesia, and he probably would not feel any pain. At first Venerable disapproved, but later was convinced and on March 30, 1842, Paris was the seat of learning for the world at the time. Soon after Jackson had sent his testimonials to Beaumont, Dr. Bigelow, who was champion of Morton's claim to priority in etherization, made before the Boston Academy of Arts and Sciences and the Boston Society of Medical Improvement a report on the recent painless operations. On November 18, Bigelow's address was published in a Boston medical journal. Jackson got wind of this and hurriedly wrote to Dr. Beaumont, asking that his letter be read before the Academy of Sciences. On Monday, Jan. 18, 1847, the Academy of Sciences met in Paris. Such leading authorities as Velpeau, Rouson and Serres were present. At this meeting Dr. Beaumont read a long report from Dr. Charles Jackson, dated 13 Nov. 1846, in which Jackson claimed that he was the discoverer of etherization and that Morton was merely a Boston dentist whom Jackson had commissioned to try his discovery for the extraction of teeth and operations later given at the Massachusetts General Hospital. Velpeau stated his belief that Morton was the original discoverer, and the Academy of Sciences appointed a special committee to investigate the claim. Morton received news that Jackson had tried to discredit him at the Academy of Sciences, and approached Jackson on this subject. Jackson tried to reassure him saying that this was an error; but nevertheless, he continued to press his claims and even published them in the Daily Advertiser before Morton could do so. Fortunately, the members of the Massachusetts General Hospital were on Morton's side and subsequently aided his claim to the discovery. Dr. John C. Warren, in his book *On Etherization, with Surgical Remarks* published by William Ticknor and Company, 1847, described the famous operation of Oct. 16, 1846, in which a tumor on the left side of the neck, lying parallel to and just below the left lower jaw, had been excised. Warren's book also discussed the description of etherization, including the cough, the deep inspiration and the audible, quickening pulse, which later became slower. Warren also described the postoperative nausea and vomiting, the relaxation of the muscles and the dilatation of the pupils. He expressed the opinion that the ill effects of ether were due to the exclusion of oxygen in the excessive amounts of ether given. Warren also discussed many operations performed at this time, and the results of etherization.

Warren's book only reflected greater importance in the claims of Morton. On March 18, 1848, Morton published a statement in English in Little's *Living Age*, laying claim to the discovery of etherization, and this was supplemented by many affidavits. Jackson's only public contact with etherization really occurred on Nov. 21, 1846, when Morton demonstrated the use of ether in the Bromfields' house to a group of doctors. As the year 1852 came to a close, the report on the Institute of France, of which the Academy of Science was a member section, agreed that their prize for etherization should be shared between Dr. Jackson and Dr. Morton. Therefore, 2,500 francs was sent to each man. Subsequently Morton refused the prize from the Montyon Commission, which stunned the donors. In order to show their appreciation, the Institute of France decided that the rejected 2,500 francs should be used for a gold medal to be given to Morton, and this was issued and accepted with great pride.

Meanwhile, Jackson's hatred for Morton was spurred by the Institute's latest action. On Nov. 12, 1846, Morton received a document from Mr. Bachanan, Secretary of State. This document, numbered 4848, gave exclusive rights to the licensed for the use of Morton's inhaler for ether. It was Morton's original intention to charge the doctors for the use of the inhaler depending upon the size of each one's practice in the town in which he practiced. In May 1846, however, war with Mexico was raging, and Morton offered to supply inhalers gratis to Army authorities, and to instruct Army surgeons in its use. Jackson, realizing that no profit could be made with so many free inhalers available, decided to give up his claim to the inhaler.

Meanwhile Jackson had incited many of Morton's creditors to foreclose and had forced Morton into bankruptcy. On March 4, 1849, Zachary Taylor became President of the United States. Since the Government had infringed on Morton's patent, it was decided that a National grant be given to Morton. Morton was told to submit a petition to Congress, which was ignored for at least two years. During this time, Morton's financial needs became extremely pressing. The members of the Boston Medical Society collected several thousand dollars and presented it to Morton in recognition of his discovery. Congress then decided to allocate a sum of $100,000 to the discoverer of anesthesia, which spurred Jackson's claim to this discovery. After many years, Morton despondently retired to his home in West Needham, Connecticut, and took up dairy farming. Communications from Washington called him back there to restate his claim before Congress. Since Morton felt that his life would not have been fulfilled without the justification of his claims, he accepted. In 1853 Franklin Pearce, a Democratic president of the United States, stated that Morton should have been reimbursed. Unfortunately, all profits of his little farm at West Needham had been enough to enable Morton to keep his wife and children out of debt and Morton began borrowing money again. He was forced to sell the farm. On July 15, 1868, William Thomas Lee Morton, a benefactor of mankind, died at the age of 42 years in poverty and dejection. His wife and five fatherless children were left unprovided for. It was many years later that Congress awarded Morton's heirs the sum of money allocated for his discovery.

Although Charles P. Jackson (portrait in *Triumph Over Pain*, p. 224) received no credit for the discovery of anesthesia, he is without a doubt an important contributor to its history. Jackson received his M.D. at Harvard in 1829. He studied for three years in France, and later was employed in the United States as an analytic chemist. Having studied in a Royal School of Mines in France, Jackson claimed that he inhaled the ether for inflamed mucous membranes after he had accidentally inhaled chlorine gas in 1841. He described the anesthetic state and then conducted experiments and he related some of these facts to friends. Jackson stated that he too was busy planning expeditions in the further pursuance of ether's effects and the proclamation of its merits. Jackson claimed that he had told Morton to use purified sulphuric ether in his experiments, and even that he should get the apparatus for its proper use from Burnette, a Boston pharmacist.

On Oct. 21, 1846, Petty, a friend of Morton's, suggested that the use of ether should be patented. Jackson, having heard of Morton's claim, suggested that he be reimbursed for giving the advice to Morton, but later, on October 23rd, suggested that he should be entitled to a percentage of the profits. Later Jackson, perturbed by the lack of profits during the war and other affairs, destroyed the patent that he and Morton had obtained. On Nov. 13, 1846, Jackson wrote to Beaumont, who was in Paris, telling him about the discovery of ether and stating that Morton was his agent. Jackson also wrote to many of the other learned men of the world to establish his claim to ether before Morton could. This later led to decisions involving many prizes and honors that were awarded to him. After a long, turbulent fight with Morton, which was being carried out by the Congress of the United States, Jackson died in 1880, 75 years old and insane.

One of the great pioneers in obstetric anesthesia was James Young Simpson (portrait in *Triumph Over Pain*, p. 272). Simpson was born poor, the son of a baker. He became a doctor and subsequently received an employment as chief assistant to the lying-in ward at Edinburgh Infirmary. He had spent years looking for a method of painless delivery, and, in December 1846, he received the news from London that Liston had performed a painless operation under ether. Simpson had decided to use it on "laboring women." The only disconcerting thing that occurred was that the women became giddy and nauseated, and vomited.

Simpson decided to use an agent called chloroform, which had been discovered in 1841, sixteen years earlier, in Bromfield, Massachusetts, by an American army sergeant named Samuel Guthrie. Although a French chemist named Souberian correctly worked out the formula and named it chloroform, and Lieberg, a German, had also worked out the method of chloroform production at approximately the same time that Samuel Guthrie did, Simpson first used chloroform at a party of several friends, as an after-dinner entertainment. It was then that Simpson noted its anesthetic properties and decided to use it in obstetrics. It was on Nov. 4, 1847, that Simpson first used it in a delivery. Six days later Simpson reported to the Edinburgh Surgical Society that 30 women had been painlessly delivered with the aid of chloroform.

Unfortunately, there were many people at this time who believed that childbirth should not be painless, and they harassed Simpson. Even the clergy rallied against him, and he had to continue his fight against them. It was not until April 1853 that Queen Victoria summoned Snow to anesthetize her for the delivery of a child (Prince Leopold). This action ended the controversy. Simpson was later appointed as one of Her Majesty's physicians and in 1866 was made a baron. At the age of 24 he was elected president of the Royal Medical Society of Edinburgh, and in 1847 the queen appointed him as Physician in Ordinary of Scotland. Unlike his predecessors, he enjoyed many more honors and on May 6, 1870, he was buried in Westminster Abbey, and was later interred in Warristown Cemetery in Edinburgh.

John Snow was one of the earliest anesthesiologists in history. He investigated cholera and served during a cholera epidemic. His description of the source of the epidemic is a true classic. He wrote two classic texts; one on ether, the other on chloroform. These books are truly the work of a scientific genius. They were beautifully simple and accurate and to this day are informative. He tried to calculate the anesthetic dosage from the weight and amounts of anesthetics in blood in animals and convert this to man. He made an inhaler for anesthetics, delivering the agents at the correct temperature. He is mainly known for the administration of chloroform to Queen Victoria. He also tested ethyl chloride but, like many of the investigators at this time, disregarded it. He died in 1858 at the age of forty-five. There can be little doubt that he was the greatest of all early anesthesiologists.

The era of Carl Koller and local anesthesia begins with the use of cocaine. Cocaine was discovered by the Spanish conquerors of Peru, who found it in use among the

Indians. At first it was used only by the Peruvian priests, but later the Spaniards encouraged its general use, because it increased the work output of Indians who had it, and it was a good source of revenue. In 1859 A. Niemann, a pupil of Koller, isolated cocaine from the cocoa plant. In 1862, Prof. Schaeffer announced that cocaine applied to the tongue produced anesthesia. Sigmund Freud and Carl Koller had been working together. In 1884, Doctor Freud went to visit his fianceé, and while he was away Carl Koller, his assistant, started an experiment by placing cocaine in the eyes of guinea pigs, rabbits and dogs. Koller revealed then that he could scratch the cornea of the anesthetized animals with a pin without eliciting pain sensation. He even used electricity and cautery upon the anesthetized eyes of animals. Elated with his discovery, he published it and later became known as the discoverer of cocaine anesthesia.

Corning, a neurosurgeon of the nineteenth and twentieth centuries, had an accidental beginning with spinal anesthesia. He noted that, if strychnine was injected into the area around the cord, convulsions of the affected area were produced. He ascertained that if cocaine would produce local anesthesia of the eye it might have the same effect on the cord. Corning had a patient who had spinal weaknesses and seminal incontinence, and he decided to do the first spinal anesthesia on him. After waiting thirty minutes for the injection of a 3 per cent cocaine solution into the patient's spinal area, Corning administered a second dose and, although he was not in the field, spinal and epidural anesthesia appeared. Later other operations were performed with this technic and in 1886 a book entitled *Local Anesthesia in General Medicine and Surgery* was published by J. Leonard Corning, M.D. (Appleton and Company Press, New York).

Thus the stage was set for the development of technics for surgical anesthesia. Topical anesthesia had been discovered by Koller; epidural by Corning; infiltrative by Halstead; spinal by Quinchi, Bier, Hildebrant, Tuffies and Schluch.

Now names, technics and agents begin to appear as a result of the early work of these men. Chemists, pharmacologists and clinicians appear on the scene, and the history of anesthesia expands so that only an encyclopedic text could do justice to it.

The story of anesthesia is ultrasimplified here, for many who contributed could not be mentioned, and thus were necessarily slighted. This story emphasizes the role investigators from the United States played, but many early workers of Britain, France and Germany played important roles. Only by reading the early texts and papers as well as the various histories of anesthesia can one obtain the true picture.

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New Books

BOOKS RECEIVED

The following books have been received by the Editor; they will be reviewed critically as space and facilities permit. Omission of more extended review, however, is not to be taken as criticism of the merit of the book.

Operative Surgery. Edited by Charles Rob and Rodney Smith. London: Butterworth & Co., Ltd.; Philadelphia, F. A. Davis Co., 1956. Vols. 1 and 2 of 8 (plus index). Profusely illustrated.

Le Diagnostic du Cancer d'Estomac a la Periode Utile (Diagnosis of Carcinoma of the Stomach at the Time Most Favorable for Treatment). By Rene A. Gutmann. Paris: G. Doin et Cie, 1956. Pp. 257.

Pathology and Surgery of the Veins of the Lower Limbs. By Harold Dodd and Frank Cockett. Baltimore: The Williams & Wilkins Company, 1957. Pp. 462, illustrated.

Spinal Cord Compression. By I. M. Tarlov. Springfield, Ill.: Charles C Thomas, Publisher, 1957. Pp. 147, with 41 illustrations.

Functional Bracing of the Upper Extremities. By Miles H. Anderson. Springfield, Ill.: Charles C Thomas, Publisher, 1958. Pp. 463. Illustrated.

The Clinical Management of Varicose Veins. By David Woolfolk Barrow. New York: Paul B. Hoeber, 1957. Pp. 167, with 70 illustrations.

Homosexuality, Transvestism and Change of Sex. By Eugene de Savitsch. London: William Heinemann Medical Books Ltd., 1958. Pp. 120.

A Follow-Up Study of 128 Closed Head Injuries in Twins, Using Co-Twins as Controls. By S. J. Dencker. Copenhagen; Ejnar Muniksgaard, 1958. *Reviewed in this issue.*

Pseudarthrose Congénitale du Tibia et Son Traitement (Congenital Pseudarthrosis of the Tibia and Its Treatment). By M. Guilleminet and R. Ricard. Paris: Masson & Cie, 1958. Pp. 98, with 78 illustrations. *Reviewed in this issue.*

The Physician's Own Library. By Mary Louise Marshall. Springfield, Ill.; Charles C Thomas, Publisher, 1957. Pp. 80. *Reviewed in this issue.*

The Care of the Patient in Surgery, Including Techniques. By Edythe Louise Alexander. St. Louis: The C. V. Mosby Company, 1958. 3d edi. Pp. 840, with 555 illustrations. *Reviewed in this issue.*

Amino Acids and Peptides with Antimetabolic Activity. Edited by G. E. W. Wolstenholme and Cecilia M. O'Connor. Boston: Little, Brown and Company, 1958. Pp. 286. Illustrated. *Reviewed in this issue.*

Surgery in Infancy and Childhood. By Matthew White and Wallace M. Dennison. Edinburgh and London: E. & S. Livingstone, Ltd., 1958. Distributed in the United States by the Williams and Wilkins Company, Baltimore. Pp. 444, with 266 illustrations, some in color. *Reviewed in this issue.*

Milestones in Modern Surgery. Edited by Alfred Hurwitz and George A. Degenshein, with a foreword by J. Engelbert Dunphy. New York: Paul B. Hoeber, Inc., 1958. Pp. 520. Illustrated.

Neurological Basis of Behavior. (CIBA Foundation Symposium.) Edited by G. E. W. Wolstenholme and C. M. O'Connor. Boston: Little, Brown and Company, 1958. Pp. 400, with 109 illustrations.

BOOKS REVIEWED

Chirurgische Behandlung der Frischen Schâdelhirnverletzungen (Surgical Management of Recent Craniocerebral Injuries). Edited by W. Tönnis. Leipzig: Johann Ambrosius Barth, Publishers, 1959. Pp. 125, with 50 illustrations.

Thirteen papers, presented at the 1956 meeting of the Rhine-Westphalian Surgical Association, make up the contents of this informative booklet, the first of a series entitled *Contributions to Neurosurgery.*

Symptoms, diagnosis and therapy of various types of cranial and cerebral injuries. including their sequelae, are discussed, with due consideration of the literature.

Among the subjects dealt with are injuries of the frontobasal region, impression fractures, subdural hematomas, intracranial hemorrhages, traumatic arteriovenous aneurysms, cerebrovascular disturbances and cerebral fat embolism. The treatment of circulatory and respiratory complications is described, and the post-traumatic changes in blood volume and blood chemistry are outlined.

Case histories, illustrations, charts, angiograms, electroencephalograms, roentgenograms and ample references contribute to the value of this little book, which, mainly in German-speaking countries, will be of interest to neurosurgeons and those general surgeons who are frequently confronted with accidental head injuries.

ERNEST G. ABRAHAM, M.D.

Clinical Enzymology. Edited by Gustav J. Martin. Boston: Little, Brown and Company, 1958. Pp. 241.

This book offers a summary of present-day knowledge in a relatively new chapter of modern medicine. The first three chapters are devoted to theoretical considerations, while Chapters 4 and 5 discuss the practical aspects of the current knowledge of enzymes. Chapter 6 is again a more theoretical discussion; the final chapter is a recapitulation, with an outlook into the future.

The book is clearly written. It has an excellent bibliography, and the chapters dealing with the practical uses of knowledge are outstanding in clarity. The study of enzymology is just beginning, and many things that now seem established probably will change in future investigation.

This reviewer considers the book a valuable essay that should be read by anybody interested in the progress of medicine.

—WERNER F. EISENSTAEDT, M.D.

Surgery in Infancy and Childhood. By Matthew White and Wallace M. Dennison. Edinburgh and London: E. & S. Livingstone, Ltd., 1958. Distributed in the United States by the Williams and Wilkins Company, Baltimore. Pp. 444, with 266 illustrations. some in color.

Since the turn of the century pediatrics has become more and more important as a specialty, and surgery as related to infants and children a specialty within the field.

For twenty-five years the Royal Hospital for Sick Children in Glasgow has included in the final year's teaching of medical students a ten-week course on the problems of surgery in infancy and childhood. The work of the student at the bedside and in the outpatient department is supplemented by lectures and clinicopathologic demonstrations. This book is based on the lectures and demonstrations and was prepared to replace many of the lectures and allow the students more time for bedside teaching.

Since the text was designed for a specific situation, the authors warn the reader that it is not a book of reference for the pediatric surgeon. Nevertheless, in its practical presentation of everyday problems, the book is valuable to the practicing pediatrician and the general practitioner as well as to the medical student. The problems presented are familiar to all—birth accidents and malformations, accidents to which children are prone—foreign bodies in the alimentary tract; fractures, and the like. The book should have a wider distribution than the authors anticipated.

M. T.

Pseudarthrose Congénitale du Tibia et Son Traitement (Congenital Pseudarthrosis of the Tibia and Its Treatment). By M. Guilleminet and R. Ricard. Paris: Masson & Cie, 1958. Pp. 98, with 78 illustrations.

The authors present a critical study of the treatment of rare congenital pseudarthrosis of the tibia, based on a series of 14 cases. Their observations have increased current knowledge of the pathologic-anatoomic picture and of the treatment. No longer need we the surgeons rely on more or less haphazard methods. A carefully chosen reconstructive orthopedic operation and antibiotic therapy assure an ever-increasing number of successful results. The authors have had the opportunity to follow most of the 14 patients since birth, observing the development of bowing of the tibia and subsequent pseudarthrosis.

The greater part of this work is devoted to treatment. The authors do not minimize the many difficulties, i.e., imperfect consolidation, failure of bone union leading to late sequelae, such as recurrence of pseudarthrosis, which requires further treatment and, in some instances, amputation. They describe the surgical interventions employed on the basis of the various mechanical problems presented by the individual patient: the homogenous bone graft, the intermedullary nail of Kuntscher, the bridge or "bypass" graft and, in difficult cases, the Hahn or Huntington method, which combines tibial nailing with fibial osteoplasty. The ideal time for operation is between the ages of 3 and 4 years.

The clinical course of the 14 patients is tabulated as follows: 5 cures were obtained and the patients were well eighteen, eight, six, four, and two years after the operation; 3 patients operated on within the first year are progressing satisfactorily; in 2 there is consolidation with further sequelae; there were 3 failures (1 requiring amputation), and 1 patient did not return for follow-up.

The authors explain that the treatment of congenital pseudarthrosis still presents many problems that tax the surgeon's ingenuity, that treatment may be followed by disappointment and that results may not be lasting. These children must be kept under surveillance for a long time (the authors have had 1 patient under observation for twenty-one years). Patients presenting operative failure should not be abandoned. Reevaluation of the individual problem and the employment of a more suitable method of treatment may correct a poor result.

This book is not a general review of that rare condition, pseudarthrosis of the tibia. It consists of the critical analysis of 14 patients studied in detail, treated most intelligently and diligently followed. The pediatrician as well as the orthopedist will enhance his knowledge by reading this book, which is replete with detailed observations.

CHARLES PIERRE MATHÉ, M.D.

A Follow-Up Study of 128 Closed Head Injuries in Twins, Using Co-Twins as Controls. By S. J. Dencker. Copenhagen; Ejnar Muniksgaard, 1958.

The 128 head injuries studied in this report occurred in 117 pairs of twins, selected from 14,647 persons born between 1880 and 1946 and admitted to one of the hospitals in coma for head injury. Of these 117 pairs of twins, 36 were classified as monzygotic and 81 as dizygotic. The incidence of immediate postoperative complications in the injured persons was essentially the same in the monozygotic and dizygotic series.

Some cognitive functions deteriorated after closed head injury, although the impairment was subtle and of no practical importance. Late "postconcussional" symptoms were considered largely of constitutional origin, as the head-injured persons seemed to differ in pretraumatic mental makeup from the average subject. A larger number of head-injured persons in both the monzygotic and the dizygotic series were more antisocial than their twins. A great number of head-injured persons in the dizygotic group were of lower social status than their twins and about 20 per cent of all the twins with head injuries were more accident-prone than their partners.

HAROLD C. VORIS, M.D.

The Care of the Patient in Surgery, Including Techniques. By Edythe Louise Alexander. St. Louis: The C. V. Mosby Company, 1958. 3d edi. Pp. 840, with 555 illustrations.

This third edition of Alexander's *Care of The Patient in Surgery* is excellent. It is one of the few books devoted solely to the operating room and the procedures conducted therein.

Although the book is written primarily for the surgical nurse, it contains much of value for each member of the surgical team.

The writing is concise, and numerous drawings and photographs augment the text.

Cardiac and neurosurgical operations have been embellished over the previous editions. The author maintains a practical plane, however, and does not discuss the highly technical procedures involved in the by-passed mechanisms.

The surgical nurses I have encountered say Alexander is their best reference book. In my own opinion it has much to offer surgeon, nurse and technician. It can be recommended unreservedly.

—PHILIP THOREK, M.D.

Amino Acids and Peptides with Antimetabolic Activity. Edited by G. E. W. Wolstenholme and Cecilia M. O'Connor. Boston: Little, Brown and Company, 1958. Pp. 286. Illustrated.

This text is a record of the proceedings of the international symposium in March 1958 of the CIBA Foundation (London).

Twenty-nine participants engaged in the discussion, which dealt with the chemical, biochemical, biologic or clinical properties of amino acids and peptide derivatives.

The discussion is presented with very little editing, and the participants are recognized authorities.

The CIBA Foundation, an educational and scientific charity, was founded in 1947 for the promotion of international cooperation in medical and chemical research. It holds five or six symposiums a year, to which scientists are invited to meet informally for discussion. Each symposium draws visitors from many countries. The proceedings are published jointly by J. & A. Churchill, Ltd., of London, and Little, Brown and Co., of Boston. All of the proceedings are important to physicians and surgeons, because of the rapidly increasing developments in medicine.

—O. C.

The Physician's Own Library. By Mary Louise Marshall. Springfield: Charles C Thomas, Publisher, 1957. Pp. 80.

The doctor's personal library is often haphazardly collected, according to his personal interests (like anyone else's). But with the rapidity of recent advances in science, it is more and more important to plan a professional collection of books and magazines. Miss Marshall, medical librarian at Tulane University, has prepared a highly informative guide, with advice on budgeting, ordering, record keeping, preparing an index, etc. A chapter on the preparation of medical papers and a plan for pooling library resources in small communities are included. The book, originally a monograph in the American Lecture Series *(American Lectures in Internal Medicine)*, is edited by Dr. Roscoe L. Pullen, Professor of Medicine and Dean of the University of Missouri School of Medicine. It is a most valuable guide for the professional man.

M. T.

Abstracts from Current Literature

Survey of the German Literature on General and Orthopedic Surgery Since 1956

K. BOSHAMER, M.D., F.I.C.S.
WUPPERTAL-BARMEN, GERMANY

TRANSLATED BY
KURT EICHELBAUM, M.D., F.I.C.S.
CHICAGO, ILLINOIS

Esophageal Surgery, 1956

HEINZ GRIESSMANN, M.D., F.I.C.S.
NEUMUENGER-HOLSTEIN

The increasing interest of the German surgeons in esophageal surgery is reflected by the increased number of papers in this field.

A review of the total field was given by Von Hasselvach (W156), who also emphasized the less satisfactory results of surgical treatment of esophageal varicosities, of the esophageal carcinoma and of the congenital atresia of the esophagus. The condition last mentioned, combined with esophageal tracheal fistula, is considered by Vogta to be connected with regressive development of the arteries of the region. He estimates the success of operative treatment at 42 per cent. Wassner, in a review of the literature reported on 142 esophagotracheobronchial fistulas, the causation, history and symptoms of which he discussed.

In Vosschulter's opinion, the prognosis of spontaneous perforation of the esophagus is favorable only if the condition is diagnosed early and actively tackled; Karchen favors a conservative treatment of this lesion. Vosschulter prefers the roentgen contrast examination to esophagoscopic study of this condition. From 1947 to 1953, 4 patients with perforation of the thoracic segment of the esophagus were admitted to the Heidelberg clinic. All of them were cured without surgical intervention. For this reason, Carter thinks that the results of conservative management are not worse than the results of operation. Moreover, with conservative therapy the patient would be spared the strain of a considerable operation.

Various papers dealing with cardiospasm. Griessmann differentiates the so-called cardiospasm from the idiopathic mega esophagus corresponding to the difference between Hirschsprung's disease and the idiopathic megacolon. The history of cardiospasm is usually brief, while in a case of mega-esophagus it may cover several decades. In the presence of cardio spasm, vomiting usually occurs immediately after a meal. A contradistinction with mega-esophagus it does not occur until several meals have been eaten and the filled esophagus merely overflows, showing none of the real characteristics of vomiting. With cardiospasm, inflammation is absent in most cases, whereas mega-esophagus almost regularly leads to esophagitis due to stagnation, and herein lies the danger of secondary carcinomatous degeneration. Roentgologically, cardiospasm shows a complete stop at the cardia and independent peristalsis of the esophagus. With mega-esophagus the cardial passage is free and peristalsis of the esophagus is absent.

Griessmann recommends cardiomyotomy for cardiospasm, according to Heller. He recommends his own method of "funneling" the lower segment of the esophagus. In order to do this he exposes the lower third of the organ transthoracically, and plicates the esophagus and wraps a collagen membrane around the organ.

Almor was first successful, with rabbits and dogs, in producing a passageable cardiospasm by exposing the cardia to low temperatures. The morphologic observations of the cardia and the esophagus made in these experiments are the same as those elicited in the early stages of this disease and thus supply a certain understanding of the pathogenesis. Almor explains the lesion by a local chronic lack of oxygen due to vascular contraction, leading to the death of ganglionic cells of Auerbach's plexus. The disease then extends to the next layers of the cardia, finally causing cardial sclerosis of the cardia as described by Wanke and Scheuttemayer.

Almor and Wanke reported the late results of esophagogastrostomy in the treatment of cardiospasm, after follow-up examinations of 17 patients. In every instance the complaints recurred sometime after the operation, i.e., esophagitis and gastritis. Regression of the esophageal dilatation was observed in 50 per cent. Heller states that stretching as well as cardiomyotomy is responsible for the fact that 70 per cent of the patients were free from symptoms. In contradistinction, the late results of operations on the sympathetic and vagal nerves are absolutely disappointing and have forced surgeons to abandon these methods. Almor and Wanke reject anastomosis also, because of the subsequent reflux esophagitis, particularly if the gastric juice shows normal acidity or hyperacidity. According to their experiments the severity of postoperative esophagitis depends upon the degree of acidity present; therefore they are convinced that in these cases only the Wangensteen operation is justified. Bauditz and Unger prefer the operation according to Heller. The exposure is transthoracic, and these authors consider it necessary to make long extramucosal incisions of the cardia. Their results are illustrated with roentgenograms. Bercholt, who has also presented an exhaustive report on this subject, considers the extramucosal cardiomyotomy of Heller the method of choice. He prefers the transthoracic approach, which makes a much more radical procedure possible. His opinion is based on 25 private cases of his own at the Zurich clinic.

Through the unfailing kindness and cooperation of Prof. Dr. K. Boshamer, F.I.C.S., we are able to make available to Journal readers the first section of a comprehensive outline of surgical progress in Germany since 1956. Prof. Heinz Griessmann of Neumeunger-Holstein summarizes the literature on esophageal surgery; Prof. Dr. Otto Kingreen, F.I.C.S., of Ludenscheid, that on traumatic surgery. Orthopedic surgery is presented by Prof. Dr. Hans Galli of Munich.

The literature from which the material was selected included all significant publications, whether periodical or in the form of books, monographs or Proceedings, to appear in Germany during the period chosen. The compilers have made an excellent selection and presented the facts concisely. The Journal warmly appreciates this timely and valuable contribution. To Prof. Boshamer, who by initiating the work has added another distinguished achievement to his long record of dedicated service to the College ideal of world-wide dissemination of the latest in surgical knowledge, we extend our sincere thanks and congratulations.

In Eisold's opinion, recurrence after treatment by stretching can be reduced by tearing the cardia at the moment of acute myotonus. He suggests, therefore, that the instruments be supplemented in such a way that at the moment of stretching sudden increase in the tonus of the cardia can be produced electrically, so that in each case actual tearing of the muscle can be accomplished. Kuehlmayer, Lorbeck and Wense express the opinion, on the basis of the literature and from observation of 25 private patients, that the significance of the acidity level a patient with reflux esophagitis is overestimated. They place their strongest emphasis on the pylorospasm caused by vagotomy, since pylorospasm inhibits the removal of the gastric secretion while, at the same time, the cardial mechanism is absent. Accordingly, they recommend pyloromyotomy as a prophylactic measure.

A thorough treatise on the surgical treatment of esophageal diverticulum is offered by Koele, who operated on 21 patients and, on the basis of his results, established the following principles: The typical column-shaped diverticulum, if larger than a plum, must be resected in one procedure. For smaller diverticula, Girard's operation can be considered, particularly if the patient is old or his general condition is poor. Although, bifurcated diverticula need no surgical treatment, large diverticula should be resected. Functional diverticula require no special treatment. Roth, Harkanyei and Belafalvi recommend the extirpation af all esophageal diverticula in one session, which they consider justifiable in view of the availability of antibiotics. According to them, invagination is permissible only for small diverticula.

Kukowaka discusses the diagnostic difficulty of diagnosing esophageal diverticula in extremely high locations. He reports a case in which the diverticulum was discovered only after complaints had been present for many years and treatment had been given for several years.

Griessmann discusses operation for cardial carcinoma. Of his 17 patients treated by radical intervention, 8 survived the operation. One patient survived more than five years. On the basis of his results, Griessmann mentions the possibility of a wrong diagnosis based on biopsy. He recommends a transthoracic procedure. Rapant, Sery, Doubravsky and Dvoracek described 2 cases of esophageal carcinoma with advanced idiopathic dilatation of the esophagus. This illustrates the prophylactic significance of Griessmann's operation in cases of mega-esophagus.

Traumatic Surgery

OTTO KINGREEN, M.D., F.I.C.S.
LUDENSCHEID

Numerous papers are concerned with the Sudeck syndrome, the increasing frequency of which is striking. Blumenstaat and Reichle emphasize the fact that the Sudeck syndrome is a disease of the whole human body, though local peripheral symptoms are its outstanding characteristics. Exogenous factors such as trauma, inflammation, cold, heat and electric current are nothing but "triggers." The recognition of the Sudeck syndrome calls for individual preparedness, in which physis of the elements must not be underestimated. The significance of regulation centers comes more and more to the the fore. According to Blumenstaat, in the center of the pathologic process is a disturbance of the neurohormonal regulation, involving the hormonal system in such a way that the STH-mineral corticoid group is more effective than it is normally. This pathologic function leads to a disturbance of the permeability of the blood vessels and thus to a change of the colloidal balance. This in turn produces a local acidosis, and this again causes damage to the walls of the vessels and dilates them. It also slows down the blood stream, greater permeability of the vascular walls to plasma and blood cells, disturbance of the osmotic pressure and finally, nutritional disturbances of the tissues and diminished discharge of the metabolic product. Kirsch observed serious changes in the endothelium of the vessels, with acuolisation and swelling of the various vessel layers. Woelez investigated the behavior of the eosinophilic leukocytes and the daily discharge of uropepsin with the development of Sudeck's syndrome; he noticed irregular curves, with pronounced change in the normal phases, within twenty-four hours. This points to an influence of the anterior lobe of the hypophysics and of the adrenal gland system. Dohrman and Thieme, as well as Uevermuth, noted decreased serum phosphatase as a sign of decreased osteoblastic activity in the presence of tissue acidosis. These data have resulted in valuable indications for prophylaxis and therapy; fractures should be reduced only with the aid of relaxing drugs. Plaster casts should be changed infrequently. Open reduction should be subject to strict indications. Local and central irritation should be avoided by all means. In the presence of serious fractures complicated by disturbances of the vegetative nervous system or by hormonal difficulties, the ganglionic blocking of ganglion and the injection of a ACTH are good prophylactic measures. Immobilization and elevation of the extremity prevents the Sudeck syndrome from becoming chronic. Reichle, Boehler and Blumensaat warn against active exercises, which create pain. Von Viten applies roentgen treatment because of its analgesic and spasmolytic effect.

The specific pathologic changes associated with tetanus are not yet clearly understood. In Spath's opinion the prodromal state is caused, just as are the initial state and full-blown tetanus, mesodiencephalitis. Homann considers inhibition of the cholinesterase activity on the motor end plate of the nerve, due to the tetanus toxin, at least partly responsible for the clinical symptoms of tetanus. He considers the administration of alkalin amino-acids, especially histadin and magnesium, helpful in the treatment of this condition. Animals can survive for many hours after infection with tetanus bacilli if they are treated with large amounts of antitoxin. The amount of antitoxin necessary, however, is not in proportion to the time that has elapsed since the application of tetanus bacilli but is much higher. For this reason, at least a half a million antitoxin units must be given to a human being once tetanus has started. In prognostically unfavorable cases of tetanus Pape used the fluid pump of Speranski and subsequent infection of 50,000 Etat serum into the lumbar sac. Christian and Schlaf likewise recommend the pump. Patients are also given serum injections into the carotid artery, as well as applications of Tetrazin. The favorable effect of Periston-N is due, according to Shubert, to fixation of the toxin by the colloids. The favorable effect of the hibernation-like sleep induced by Megafan is explained by Hossli as due to the influence of the Megafan on the acidosis of tetanus. In cases of serious closed injuries to the skull accompanied by coma, first attention must be given to the respiratory tract, which must be kept open (the patient's head should be kept low and turned to the side and a Mayo tube and a tongue forceps must be available. If necessary, a tracheotomy must be done and the bronchial space aspirated; oxygen must be given, and shock treatment is essential. Frowvin recommends blood transfusion or high-molecular fluids to replace the blood, in order to dilate the peripheral vascular system. After the body fluids are in balance, but not before, Hydergin, Pendiomit and Phenotiazimen for inhibition of the vegetative nervous system must be given. In case the blood pressure rises early, a venous section would be done instead of a blood transfusion, if an intracranial hematoma can be ruled out. Venostasin favors venous drainage.

Artificial hibernation with Pendiomit cuts off the stimuli of the brain stem in its sympathetic and parasympathetic phases and prevents edema of the brain. This treatment may reduce the indications for surgical intervention. Children under 14 years of age and old persons, however, must be excluded from this treatment.

Every communicating injury of the nasal sinuses with the base of the skull must be considered an open brain injury. If the fluid drainage from the nose and the pharynx does not stop within thirty-six hours, an operation is indicated. Kuhlrndahl advocates a transfrontal intradural procedure, with plastic coverage of the torn dura from the inside.

Loew has established the following indications for surgical treatment of trauma to the optic nerve associated with frontal skull injuries:

1. Unilateral loss of vision in the presence of a normal fundus, if no improvement occurs by the fourth day.
2. Unilateral loss of vision with edema, unless improvement can be demonstrated by fourth day.
3. Partial loss of vision with secondary increase of the loss.
4. Narrowing of the bone channel of the potic nerve, demonstratable in roentgenograms.

Lennartz, Mueller and Klug report on subdural hematoma due to tear of the pontal veins and on its diagnosis and treatment. They emphasize the necessity of biopsy after drilling of the skull, in order to distinguish between a chronic hematoma and Pachy meningitis.

Of 40 patients with severe fractures of the skull complicated by injuries to the brain substance, only one-third were able to work without any disability five to eight years later. In the remaining cases, the defects observed after the accident had improved only partially or not at all. Dues observed in patients with injuries of the skull and brain an increased excretion of gonadotropic hormones of the hypophysis when Aschheim-Zondek's test for pregnancy was used. In his opinion, this explains the long-lasting vegetative initial disturbances, which otherwise are not part of the clinical picture. Ruckes and Gasteyer have shown, by microscopic observations, the occurrence of purely traumatic late apoplexy. Perivascular bleeding, edema, regressive vascular changes and degenerative foci may appear far from the site of the bleeding.

Injuries to the Thoracic Cage—The increase of serious closed thoracic injuries is in proportion to the increase of traffic and industrial accidents.

These injuries are seldom open. Conservative treatment of closed injuries to the thoracic cage, with aspiration and drainage, has not been disputed. Since the work of Zenker, nor has the necessity of operative care of mediastinal emphysema (mediastinotomy and parasternal incisions). If one cannot control cutaneous emphysema and tension pneumothorax by these means, an injury to the trachea or to a bronchus is, in all probability, present. In such a case the only successful treatment is thoracotomy, with exposure of the injury and plastic suturing of the trachea with muscle secured from the intercostal muscle. Loehr calls attention to disturbances of the small circulatory system in thoracic contusions, demonstrable by bronchospirometric means, and recommends the application of oxygen by nasal catheter. Zenker recommends adding intercostal anesthesia, which he considers extremely useful in combating pulmonary hypertension and edema, diffusion and hypoxemia. In cases of edema of the lung, however, tracheotomy is necessary if there is a perforating thoracic injury and airtight closure of the pleura is impossible. Laux recommends treatment with a vacuum capsule after Grunert. The capsule . consists of a Plexiglas chamber with an air-filled rubber ring and elastic bandages, which is held tightly to the thoracic cage. By means of a pump a partial vacuum in this chamber is produced, that the edge of the chamber adheres tightly, by suction, to the thorax. A rubber window in the chamber, likewise airtight, permits aspiration and continues the rinsing of the pleura with antibiotics. Collapse of the lungs after blunt trauma to the lung is based upon atelectasis due to absorption. According to Mayor, the results of this are retraction and diminution of the volume of the involved lung area, with displacement of the mediastinum. The intrathoracic equilibrium is easily restored by pneumothorax and perilous condition thus immediately removed. Tauber points out chylothorax, though it often does not appear until several days after the injury and frequently only after the patient begun taking food, is accompanied by rather stormy symptoms. Should fasting and aspiration not cure the condition within eight to ten days, thoracic ligation at the site of the injury becomes a necessity. Location of the site of injury is facilitated, according to Tauber, by giving the patient cream six hours prior to the operation. If the site of injury cannot be found, the thoracic duct should be ligated on the right side just above the diaphragm.

Ruptures of the Liver—According to Staucke, the liver, like the lung, can be divided into individual segments. Each of the segments has a circulatory and biliary system with collaterals. Segmentally, each half of the liver is subdivided into four lobes, also may be surgically resected. In Staucke's opinion, hepatic resection will eventually have a special place in the treatment of rupture of the liver, because of its decided advantages over atypical surgical treatment (it seems that by "a typical" the author means operation that disregards the segmentation of the organ).

Moreover, segmental liver resection is dangerous.

Retroperitoneal Duodenal Injury — Diagnosis and therapy of the retropertoneal duodenal injury are discussed by Stafinic. In order that the duodenal injury may be treated properly mobilization of the hepatic flexures, including the transverse portion of the colon, is recommended. A rare injury of the intestines, injury by air pressure, is described by Weller. In the terminal portion of the intestine, if compressed air becomes so dense that it has the effect of a solid body, it may rupture the sigmoid.

Injuries of the Upper Extremities.—With regard to injuries to the shoulder of uncertain origin, Grassberger and Ceyss advise roentgen study of the acromioclavicular joint after filing the joint with Digodat. An injury of the joint capsule can be diagnosed by this method, especially in the axial view, in which one can see the contract medium exuded cranially and caudally.

So far the operative treatment of finger tendon injuries are concerned, the German surgeons proceed according to Bunnell, Von Moberg and Zrubecky. For injuries of the flexor tendons of the thumb, J. Boehler recommends Z-shaped lengthening of the tendon where it joins the muscle in the area of the forearm. In order to confirm an accompanying injury to the nerves at the fingers, Boehler advises examination of the patient's sweat with the otoscope. The presence of sweat pearls permits the conclusion that the nerves are intact.

Witt discusses the functional disturbance of the metacarpal phalangeal joint of the thumb that follows ligamentous tears in connection with fractures of the metacarpocarpal joints. In the presence of poor thumb grasping he recommends restitution of the function of the thumb by a fascial plasty of the first metacarpocarpal joint and by spanarthrodesis between the navicular bone, the multangulum majus and minus and the first metacarpal bone.

Injuries of the Lower Extremities.—The results of mailing of a fracture of the femoral neck are, according to Mittag, still far from satisfactory. According to Schuetze the results can be improved by inserting, instead of a nail, a bone graft secured from the boiled fibula of a cadaver. He was able to show histologically that such a graft, in contradistinction to the metallic foreign body, assumes close contact with the surrounding bone. The graft does not form new bone, however, but is absorbed gradually as new bone is formed in its environment. In Rehm's opinion the principal problem in the treatment of fracture of the femoral neck is the physiologic significance of the vascular system, which must be taken into consideration in doing osteosynthesis. He recommends a canalized nail, which is adjusted to the cranial part of the cross section of the femoral neck. The nail is split in its anterior section to supply space for revascularization of the upper lateral quadrant of the femoral head. For tearing of the collateral medial and the lateral ligament, Jelinek recommends the free fascial graft or the pedicle fascial graft and the plastic repair with the gracilis tendon, according to Mandl, if the injury is of the third degree. Injuries to the cruciate ligament are treated by the method of Hey-Groves.

Streli has devised a probe with curves made in different directions to facilitate the liagnosis of meniscal tear in the posterior third of the knee joint. This probe permits a traumatic examination of the knee and obviates the necessity of excising the meniscus. The same author advocates partial resection of the meniscus, which in his opinion prevents arthritis after total extierpation. He rejects Payr's incision in favor of his own approach. Removal of the patella with subsequent vastplasty according to Uppleger, is recommended by Baumgart as the best treatment for severe direct fractures of the patella.

Maatz discusses fractures of the tibial condyle and recommends early operation. He advises removal of a torn meniscus and goes so far as to advocate removal even of an intact meniscus if this is required for better exploration of the fractured condyle. After careful elevation and impaction, the fragments are immobilized with the so-called spongiosa spring. Lenz shares this opinion and reports satisfactory results with this treatment. According to Hauck, the main obstacle to reposition and regeneration in a long spiral fracture of the tibia is the large upward-pointing fragment and the lower tribial fragment, which frequently is considerably displaced toward the fibula. He recommends resection of the pointed end before the fragment is fixed with circular wire, but only if the sharp end of the fragment is denuded of grafted homoioplastic joint cartilage preserved periosteum and bone marrow, because otherwise the end will become necrotic and prevent regeneration.

Severe fracture-dislocations of the talotibial joints are treated by Kuentscher with parcutaneous nailing of the external malleolus. For these fractures, which are frequently complicated by tears of the interosseous ligament and consequently by spreading of the mortice, Meyer, reports successful use of the clamp, after Zueler.

Orthopedic Surgery

HANNS GALLI, M.D., MUNICH

Among the numerous books and monographs published in 1956, some deserve the special interest of the orthopedic surgeon. *The Roentgenological Differential Diagnosis of the Bone Disease,* by Hellner and Poppe,* must be considered a real standard work. In this book every bone disease is discussed according to topographic standpoints and is illustrated by excellent pictures. Equally important is *Spondylolisthesis of the Lumbar Spine* by Brocher and *Roentgen Examination of the Skeleton of the Child,* by Swoboda,* which, after a review of the properties of the growing skeleton, describes systemic and local developmental anomalies, as well as endocrine and growth disturbances and the nutritional and metabolic diseases. Inflammatory disease of bone, as well as disease of the reticuloendothelial system and changes of bone due to blood dyscrasia, are thoroughly discussed.

In the little volume *The Human Hand*** Lange discusses this "master work of creation" from an anatomic functional point of view and from the point of view of the physician. He has adorned the book with psychological, chirognomic and artistic illustrations naturally. The possibilities of modern orthopedic surgical treatment of the hand are also discussed. In a book by Burger and Knoblock, *The Hand in Diseases,** the hand is discussed as a mirror of the human character and of pathological organic disturbances.

*The Hand Book of Medicine of Athletic Diseases,*** by Arnold, gives an excellent review of the history, methods of examination, purpose of treatment, and other questions connected with diseases associated with athletic activities. In his monograph on causlagia, Trostdorf emphasizes that the syndrome is activated by an increased stimulation of the sympathicus. Every nerve can be involved in causalgia. Surgery of choice for this condition is elimination of the sympathicus. In mild forms, however, one may try treatment with insulin. Operation on the nerve itself is never indicated.

An interesting study from the medical-historical point of view is presented by Valentin his small book *The History of the Plaster of Paris Cast.*

The well-known book by Schade, *Theoretic Foundations for the Making of Prostheses,* has been published in a completely new revised edition.

A volume of discussions of the German Orthopedic Society (edited by Lange) conveys a good idea of the accomplishments of orthopedic surgery in Germany.

The first subject on the congress program is "Biology of the Bone and Cartilage." Krauspe describes the most recently acquired knowledge of the development of bone and matrix and the physiologic process of deposition of mineral salts and discusses the external factors that influence the formation of bone, its shape and its metabolism. The effect of the hormone on the growth of bone and bone metabolism is discussed by Nowakowski, who makes valuable diagnostic and therapeutic suggestions. According to Bernbeck, the gravidity hormone accelerates the maturation of bone and is able to shorten the treatment of congenital coxa vara. The clinical significance of hormonal disturbances is emphasized by Lange, who offers, as examples, scoliosis and congenital coxa vara.

The usefulness of the different materials used in bone grafting is evaluated differently by different authors. Maatz uses calf bone de-

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*Stuttgart: Georg Thieme Verlag, 1956.
**Stuttgart: Encke, 1956.

*Munich: Lehmann, 1956.
**Leipzig: Barth, 1956.

proteinized in hydrogen peroxide, while Guentz and Brueckschen use cialit bone and Edelberger and Hoffman prefer bone preserved in Palavit. Ritter states that hieronymous material can be successfully transplanted if preserved in a freezer. In his opinion the success of the transplantation depends upon preservation of the protein structure if the protein is despecifized. For this reason, boiled grafts kept in alcohol and homogenous or heterologous grafts prepared by dry sterilization are unfit, being nothing but dead foreign bodies. Cieber is convinced that the deep-freezing method causes fewer biochemical changes of bone than does cialit, a fact he discovered by observing the decomposition of fat and protein and also by determination of the phosphatase activity. In animal experiments using denatured heterologous bone, Kienholz and Kenkes say that they have encountered no anaphylactic reactions or disturbances in bony union of the transplant.

Transplantation of cartilage is likewise discussed. The results are frequently good. Reiss, on the basis of his animal experiments with homoioplastic cartilage preserved in the freezer, considers the cartilage still viable after twelve weeks and demonstrates union after twenty-two weeks. Ehlat successfully grafted homoplastic joint cartilage, preserved in the deep freezer, on 8 patients.

The second main subject of the orthopedic congress was "The Functionally Disturbed Hand." Witt presents an excellent review of this discussion. We just mentioned the substitution of the necrotic lunate bone by a prosthetic replacement and the plasty for the congenital dislocation of the metacarpo-phalangeal joint by Bunnell-Witt.

The third subject of the congress was "Chiropractic." Sell, the representative of this method, advocates the widest possible application of this method. He suggests the use of it in causalgia, Sudeck's atrophy, peri-arthritis-humerocapularis, intermittant claudication, Meniere's disease, etc. This attitude was unanimously rejected. An impengement of a villus in the small vertebral joints is recognized, as is the so-called dislocation or subluxation emphasized by chiropractic. Manipulation for the purpose of relieving this condition is generally considered justified. Chiropractic methods in general, however, should be rejected except for a few definite disturbances; for the majority of diseases of the spine, chiropractic is unsuitable, as Schlenzka emphasizes. Mau, Witt, Radthcke and Heipertz also point out the dangers of manipulation. The attitude of German orthopedic surgeons is best expressed in the words of Lange: "Mutual reduction may enrich the method of treatment of orthopath if a strict indication is made," and "The teaching of the chiropractor is hypothetical and unproven." The latter statement applies particularly to the teaching of Illi and Palmer, according to Lindemann.

Matzdorf states that he observed a deformity of the epistrophil dens of 80 per cent of all patients, none of whom had ever had any trouble referable to the cervical portion of the spine. This, he states, disproves the chiropractic theory that the asymmetric position of the dens is a source of complaints referable to the neck.

H. Junghanns, in his book *Roentgen Diagnosis and Clinic of Diseases of the Vertebral Column*, is extremely critical of the chiropractic theories.

In this technical age, which aims for perfection, medicine also is much influenced by thinking in physical terms. Hackenbroch, by numerous examples, demonstrates the close relation between orthopedics and technical applications. Like Hohmann, however, he emphasizes the fact that technical considerations must not supersede biologic and physiologic knowledge. The functional point of view with regard to the cooperation of muscle chains deserves special consideration. With regard to tendon transplantation in cases of spastic paralysis, according to Rettig, myotomy after Silferskioeld, possibly in combination with the Stoffel operation, can be recommended to accomplish firm subtalar fusion. Rettig uses the nail of Witt, which has three phalanges and is inserted from the talus. *Poliomyelitis.*—Behrend in 1956 published a book entitled, *Exogenic Factors in the Pathogenesis of Poliomyelitis*. Interestingly enough, he notes that exogenic factors in 1952 were demonstrated in only 1 per cent of the cases. Of the 35,765 patients with this condition in West Germany

from 1946 to 1955, 3,383, or approximately 10 per cent, died.

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Dalland emphasizes the possibility of accomplishing complete repair in children, particularly if an early diagnosis is made and modern antibiotics are employed. For the same reason, Bitzen emphasizes the significance of early diagnosis. Interesting is the fact that tuberculosis has never been observed in chondrodystrophic patient or in a spastic or flaccid extremity. Lankhagel discusses the difficulty and errors encountered in diagnosis. Scholze discusses favorably the surgical evacuation of a focus in the presence of tuberculosis spondylitis. Pia operates only if acute transectional myelitis is associated with spondylitis; he would wait at least six months to operate in a case of slowly developing transverse myelitis. Another representative of conservative treatment is Loeffler. According to him, a costal transversectomy, with evacuation of the tuberculous focus, is indicated only in the presence of complete transverse myelitis. Risko and his co-workers consider operation indicated only when conservative treatment fails and when calcified psoas abscesses are present. The removal of such an abscess should be accompanied by excision of the vertebral focus, and fusion should be done as a second surgical procedure.

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Lower Extremities.—The paper "The intraspongiose anesthesia in operations of the lower extremities," by Kohl, deserves great interest. So far, only Russian authors have reported on this procedure. By means of the cuff of a blood pressure machine applied at the desirable level, a pressure is produced which is 40 mm. of mercury higher than normal. A fairly large needle is inserted in the spongiosa of the calcaneus or the medial malleolus and procaine hydrochloride (0.25 per cent) is injected. In operations on the foot, 60 to 70 cm. is sufficient; higher, up to the knee, 80 to 100 cc. Kohl points out that this procedure decreases the muscle tonus almost totally. Complications have not been observed.

Traumatic Hip Dislocation: Fineschi reports 7 cases; Trojan and Pesohl, more than 79 observations in twenty-three years, and Grobelski, 7 cases. This injury requires immediate careful reduction. A simultaneous fracture of the acetabular roof worsens the prognosis considerably. Vollmar and Wagler state that they have observed necrosis of the femoral head in 50 per cent of the cases. In order to improve the results and prognosis, they advocate reduction by means of longitudinal and transverse traction on the leg; this is important for the first forty-eight hours, after which reduction of the acetabular fossa by rectal digital manipulation is essential. Erhalt and Gelehrsis also discuss the problems, secondary injuries and therapy of this important injury.

In early diagnosis of slipped epiphysis of the hip, the lateral view is very important (Esser). In this view a widening of the epiphyseal plate can be seen rather early. Hormonal influences are responsible for the slipping of the head. Lange and Lange demonstrate that a decrease of the sexual hormone or an increase of the growth hormone produces softening of the femoral epiphysis. *Early diagnosis is important; it improves the* results of the treatment, because the slippery epiphysis can be held in place by means of a bone span. A valuable confirmation of the significance of the hormonal metabolism is found in the information given by Schlueter and Peter, who observed a coxa vara of the epiphyeal area in a 46-year-old dwarf. Slipping was possible because the epiphyseal plate had persisted owing to the hypophyseal disturbance. Goetz prefers the roentgen projection of Lauenstein, because in this view softening and widening of the epiphyseal plate can be seen very early.

Many diseases of the juvenile hip give rise to senile malum coxae in later years (Pitzen). The cause of coxarthrosis is damage to the cartilage combined with preservation of function, after dislocation, inflammation, Perthes' disease and slipped epiphysis.

It recommends the Arthrodesis In the treatment of coxarthrosis, arthrodesis by means of the Witt nail (M, 119) or nail and bone span according to Lange, is recommended if conservative treatment fails. For the bilateral condition arthroplasty is indicated. Voss (C, 351 and M, 954) describes the so-called temporary hanging hip, in which the fascia lata is widely incised laterally and arteriorly, the greater trochanter is osteotomized and tenostomy of the adductors is added.*

Imhauser (C, 354) states that essential improvement has been obtained by shifting the trochanter proximally and medially. In arthroplasty of the hip, Judet's prosthesis is considered preferable to the vitallium cup so far as Germany is concerned (Neff—L II, 693). Witt (L II, 668) wishes to narrow down the indications for arthroplasty in favor of arthrodesis. Arthroplasty in the young is absolutely contraindicated. In the presence of protrusion of the acetabulum, the rather deep socket should be filled in with the resected femoral head. Reimers (L II, 680) recommends the large endoprosthesis to prevent necrosis of the femoral head and neck, which is the main cause of failures. Heinze (L II, 700) explains the shortcomings of endprosthesis by the particular artificial material of the prosthesis and by its poor static insertion. On the basis of anatomic-morphologic examinations, Halshofer (B, 352) concludes that in arthroplasty of the hip the normal length of the femoral neck must be preserved and its angulation determined according to that of the other femuro. The congruency of the joint surfaces is important. The formative stimulus of the endo prosthesis produces functional adaptation. Capsular rigidity and absorption of the neck of the femur are detrimental to success.

Mittelmeier and Linger (A, 519) demonstrate, in a readable antomic-histologic paper, that the Plexiglas endoprosthesis produces a relatively valuable new joint formation. They observe that the regenerated capsule is lined with a new synovial membrane and the acetabulum with fibrous cartilage. Plexiglas slivers produced by friction may lead to foreign body granuloma. In order to prevent loosening of the prosthesis by pressure absorption of the bone, longitudinal grooves in the prosthesis are suggested.

In the diagnosis of uncertain diseases of the knee joint, Leyss (A, 403), prefers a magnified roentgen film of an arthrogram taken with a contrast medium; thus clear, unmistakable pictures are produced. Anders (G, 19) adds 18 cases of juvenile aseptic necrosis of the patella (Larson-Johannson's disease) to the 25 cases already published in the world literature. This condition is characterized by a light patella and transitory limitation of flexion and extension of the knee. Roentgen study reveals spotty atrophy of the patella and sometimes complete fragmentation. The fact that this condition may be associated with spina bifida occulta gives rise to the question

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*Without knowledge of the original paper, it is difficult to understand what is involved in this procedure.—*Translator.*

of a casual connection between the two conditions.

On the basis of mechanical mathematical consideration, Kesselbach (B, 240) points out that in supracondylar osteotomy for habitual patellar dislocation, rotation must be laterall, because only then is the quadriceps pull increased medially.

In 7 per cent of the cases of tearing of the ligamentum collaterale fibulare, Jonasch (U, 336) states that he has observed damage to the nervus peroneus that might necessitate surgical exploration. Jelinek (KI, 205) considers early operation necessary to repair the lateral and medial collateral ligaments. The results are good in more than 80 per cent of the cases.

Stedfeld (B, 532) rejects the granuloma theory to explain giant cell tumors about the knee joint. He considers them bone tumors. He suggests partial or total synovectomy, followed by roentgen treatment because of the danger of recurrence.

Aberle-Horstenegg (B, 414) describes 5 cases of the rare tibia vara (Blount's disease). In 1 case, treatment with a splint succeeded in correction and healing of the epiphyseal disturbance in a short time.

According to Muralt (A, 501), damage to the distal tibial epiphysis, often overlooked in children, leads to deformities that necessitate palliative surgical intervention (osteotomy). For late deformities simple osteotomy is unsatisfactory. Hohmann (A, 199) suggests that a bone graft be inserted into the tibia (after osteotomy?) and epiphysodesis of the fibula.[*]

Muralt (A, 263) treats the rare dislocation of the peroneus tendon by means of a so-called "malleolar roof plasty." The posterior malleolar section is elevated like a lid by means of a chisel, and a pedicled fascial strip, reinforced by nylon, is attached to the tendon. A monograph on "heel pain" and its causes is offered by Stuecke.[**] Klevel (P, 51) has observed good results from hydrocortone injections. Schoenbauer states that in dislocations and fracture-dislocations of the talus the best results are achieved by reduction. For comminuted fractures arthrodesis is preferable. Arthrodesis is superior to removal of the talus. Contactures of the bones of the foot are based either on congenital changes or on static functional disturbances. One of the more frequent causes is the coalition between calcaeus and navicular bone. According to Brands (A, 202), the exact diagnosis of this condition can be made only in oblique views, and only surgical treatment can relieve the symptoms. Ernsting (A, 433) suggests subtalar arthrodesis.

Nagura (E, 187) develops a new theory of congenital clubfoot: that repeated extension and flexion of the lower extremity *in utero* are responsible for the deformity.

(To be Concluded in May)

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[*] *It is difficult to understand this procedure without reading the original article.—Translator.*

[*] Stuttgart: Georg Thieme Verlag, 1956.

If the brain is injured by a blow or in some other way and concussed, the patient immediately falls to the ground, becomes speechless and can neither see nor hear. Most cases are fatal.

Following brain injury, fever generally appears and there is bilious vomiting together with paralysis of the body: such patients are in fatal case.

—*Hippocrates*

IMPORTANT ANNOUNCEMENT

Contributors of scientific articles for publication in The Journal of the International College of Surgeons from Europe, the Near East and the Middle East should send their articles to:

European Office of the
International College of Surgeons
6-8 Rue de la Confederation
Geneva, Switzerland

A special committee has been appointed to evaluate the papers submitted for publication. The Journal publishes summaries in English, French, German, Spanish, Italian and Portuguese. Summaries of articles should be included in as many of these languages as possible.

AVIS IMPORTANT

Les auteurs d'articles scientifiques destinés à être publiés dans le Journal du Collège international de chirurgiens sont priés d'adresser leurs articles à l'adresse suivante pour l'Europe, le Proche et le Moyen Orient.

Bureau Européen du
Collège international de chirurgiens
6-8 rue de la Confédération
Genéve (Suisse)

Un comité a été nommé pour l'examen des articles à paraître. Les auteurs sont priés de joindre à leur travail de brefs résumés en français, anglais, allemand, espagnol, italien et portugais si possible.

The following pages comprise

Section II

the BULLETIN

of the

Journal

of the

International College of Surgeons

COLLÈGE INTERNATIONAL DE CHIRURGIENS

FOUNDED BY DR. MAX THOREK

Twenty-Fourth Annual Congress
North American Federation
International College of Surgeons

Palmer House

Chicago, Illinois September 13-17, 1959

The North American Federation Comprises

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THE UNITED STATES OF MEXICO

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COSTA RICA
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Chicago 10, Illinois

To Report
News Items Concerning Section and Regional Activities
address
NEWS DEPARTMENT
International College of Surgeons
1516 Lake Shore Drive
Chicago 10, Illinois

The Journal of the International College of Surgeons

Vol. 31, No. 4 SECTION II April, 1959

BULLETIN

Embodying Activities of the World Federation of General Surgeons and Surgical Specialists, Section News and Comments

Editor-in-Chief—MAX THOREK, M.D.
Associate Editor—PHILIP THOREK, M.D.
Consulting Editor—MORRIS FISHBEIN, M.D.
Assistant Editors—DOROTHY LANGLEY AND HELEN WEISS

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Schedule of Meetings

INTERNATIONAL COLLEGE OF SURGEONS

1959

May 6 Indianapolis, Indiana	Indiana State Division U. S. Section, International College of Surgeons
May 9-10 Tel Aviv, Israel	Israel Section International College of Surgeons
May 21 Bangkok, Thailand	Thailand Section International College of Surgeons
May 21-22 Huntsville, Alabama	Alabama Surgical Section U. S. Section, International College of Surgeons
May 28-30 Kiamesha Lake New York	New York State Annual Meeting U. S. Section, International College of Surgeons
May 29-30 Athens, Greece	Greek Section International College of Surgeons
June 1-3 Hamburg, Germany	German Section and German-Speaking Sections, European Federation International College of Surgeons
June 19-21 Lyons, France	French Section International College of Surgeons
July 25-26 Amsterdam, Netherlands	The Netherlands Section International College of Surgeons
August 8-9 Helsinki, Finland	Finland Section International College of Surgeons
August 19-20 Vienna, Austria	Austrian Section International College of Surgeons
August 22-23 Munich, Germany	German Section International College of Surgeons
August 25 Paris, France	French Section International College of Surgeons
September Santos, Brazil	Brazilian Section International College of Surgeons
September 28-29 Chattanooga Tennessee	Tennessee Valley Medical Assembly U. S. Section, International College of Surgeons
September 30-October 4 Guayquil, Ecuador	Ecuador Section International College of Surgeons
October 30 Hong Kong, China	China—Hong Kong Section *International College of Surgeons*
November 2 Bangkok, Thailand	Thailand Section International College of Surgeons
December Taipei, Taiwan (Formosa)	China—Formosa Section International College of Surgeons
December Jaipur (Rajasthan) India	India Section *International College of Surgeons*

(Continued on next page)

Schedule of Meetings

INTERNATIONAL COLLEGE OF SURGEONS

1959

MIDSUMMER POSTGRADUATE EUROPEAN TOUR

July 17 - August 27, 1959
Dr. Ross T. McIntire, Coordinator

TWENTY-FOURTH ANNUAL CONGRESS

North American Federation
(Canada, Mexico, U. S., Central American and Caribbean Sections)
International College of Surgeons
SEPTEMBER 13-17 CHICAGO, ILLINOIS

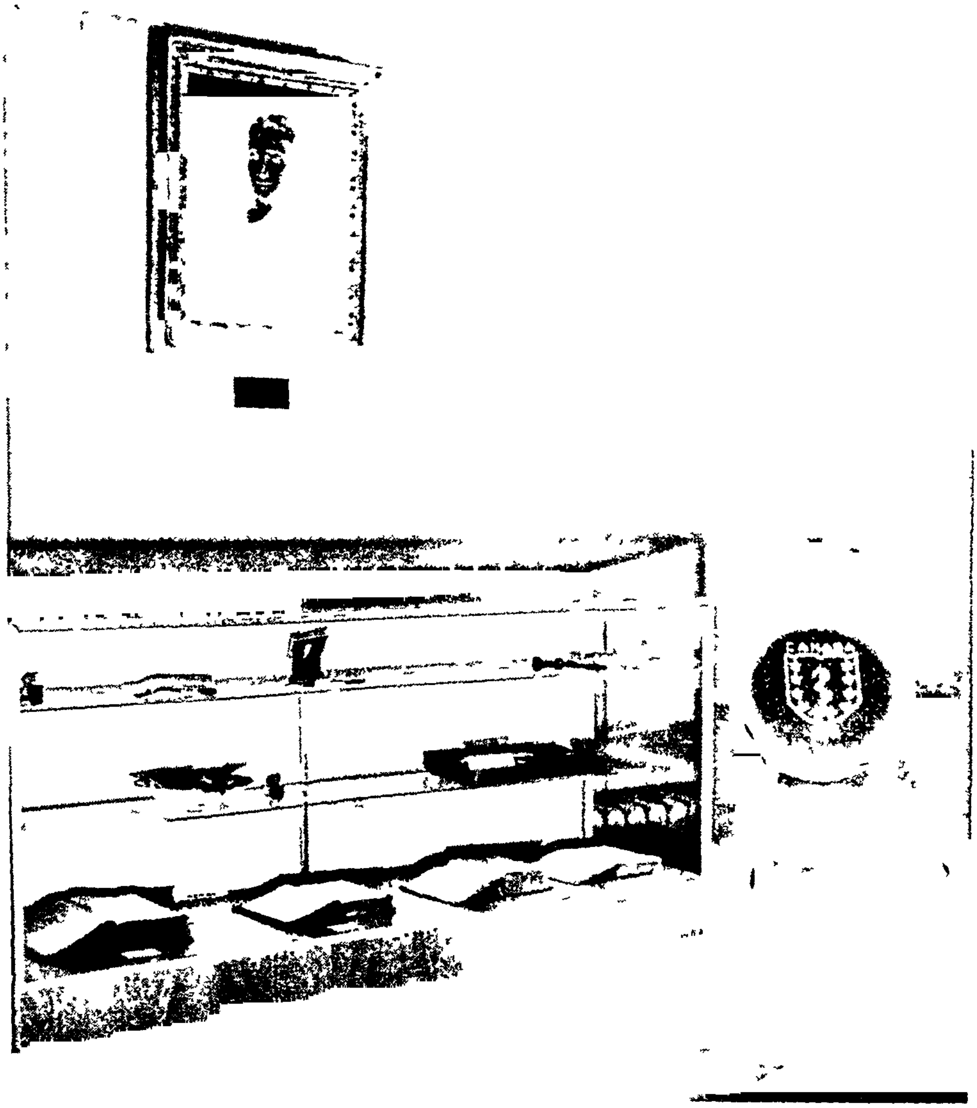
AROUND-THE-WORLD POSTGRADUATE CLINIC TOUR

October 10 - November 28
Dr. Edward L. Compere, Coordinator

1960

TWELFTH BIENNIAL INTERNATIONAL CONGRESS

International College of Surgeons
Prof. Dr. Pietro Valdoni, Congress President
MAY 15-18 ROME, ITALY



COMMONWEALTH ROOM IN SURGEONS' HALL OF FAME

The Canadian Room in the International Surgeons' Hall of Fame has a quality that entices visitors to linger and admire the portrait of Edward Jenner, the gift of Dr. and Mrs. Walter F. Charteris. The portrait hangs above a glass case in which are displayed two bistouries, the gift of Dr. Lyon H. Appleby, which Jenner had used as scarification knives. Other exhibits, presented by the Canadian Section or by individual donors, are equally interesting.

Comments by the Founder

IMPORTANCE OF NATIONAL SECTIONS

Dr. Max Thorek

Last month I discussed the increasing tempo of the international activity of the College. I pointed to the growth of cooperation within the Federations as evidenced by the coming joint meeting, in Hamburg, June 1-3, of the German Section and the other German-speaking Sections of the European Federation, namely Austria, Switzerland and the Netherlands. I also called attention to the two-way attraction that lies at the heart of the success of our Postgraduate Clinic Tours. The traveling surgeons are drawn to the Fellows of the Sections they visit by mutuality of purpose, and the host Sections welcome the visitors as emissaries of good will, with whom they seriously, and as equals, discuss the problems of surgical science, technic and progress.

Furthermore, in previous articles I have commented on various movements and undertakings in which the College is engaged that advance international amity and add stature to the surgical profession. Many of these projects naturally originate in the College—the great International Congresses, the International Hall of Fame, honoring the surgeons of the entire world, and the very concept of surgery as a science and an art that gratefully recognize that their roots go deep down into the history of all nations. Acknowledging this debt to the universal past, the College seeks to spread the fruits of surgical knowledge and skill among all the peoples of the world. To that end we are dedicated.

We welcome allies in our endeavors, and gladly we give our help to the efforts of others. We cooperate with agencies of government, national and international. We extend the hand of friendship to all men and all organizations that, like us, strive for a happier future for this, our mundane sphere, threatened as it is by forces inimical to the concept of democracy and the humanistic ideals of existence.

To achieve all this, to encompass the wide program we have outlined for ourselves through the International College of Surgeons, we must be strong.

Strength, for us, begins with the individual national Sections.

Each Section of the International College of Surgeons is a wellspring of power. The College itself is only the sum total of sectional achievement.

It is, consequently, a great source of personal satisfaction to me and to all of us who have the welfare of the College at heart to see the national Sections of the College go from strength to further strength and to greater achievement in our joint endeavor to advance our ideals.

The evidence is incontrovertible. Each day there comes to me as International Secretary-General of the International College of Surgeons a sheaf of communications that report the multitude of activities of our Sections. I am heartened and profoundly gratified as I consider the scientific meetings, the conferences, the aid given to students and to young surgeons, not only by the central body, but by individual Sections. This is important work. It is significant in itself, and it transcends itself because it adds to the collective strength of the College.

The conclusion therefore is obvious. It is the chief duty of each Section to look to its own strength: to increase its membership, to guide its young surgeons, and to add substantially to the status of surgery in its own country. In that way it participates most effectively in the College program and best serves those far-visioned ideals to which we are pledged.

Max Thorek

Inauguration of Reception Center in Paris

French Section of the International College of Surgeons

Through the courtesy and devoted interest of **Dr. Pierre Jean Viala, F.I.C.S.**, former head of the Clinic of the Faculty of Medicine in Paris, arrangements have been made for a reception room and center of information that will serve the French Section of the International College of Surgeons. The French Section graciously extends the privilege of using the facilities of the center to all the Fellows of the College.

Clinique de l'Alma

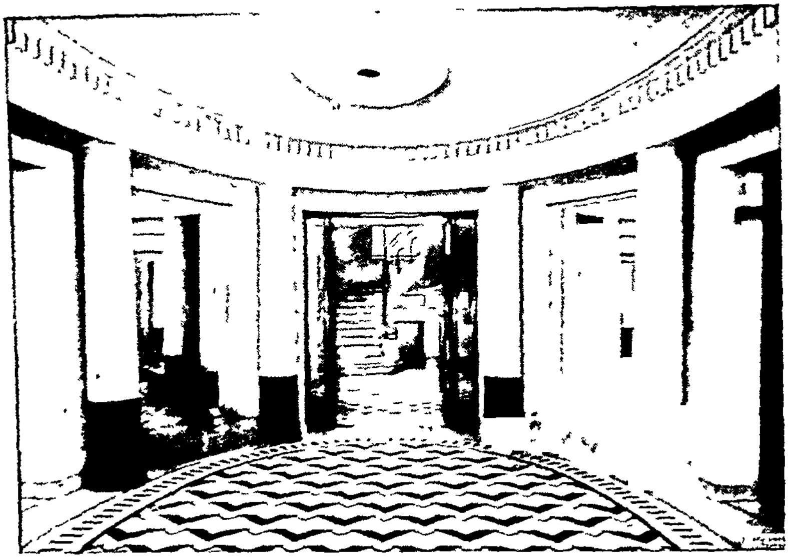
The center is located at the *Clinique de l'Alma in* the *rue de l'Université,* number 166, in Paris. We are invited to make note of the telephone number, which is *Invalides 13.70, Paris,* and to use it at our convenience.

The Center is prepared to provide information to members of the International College of Surgeons concerning clinics, scientific events, College activities, and, in general, to render such services as a visitor is very likely to be in need of and greatly appreciate.

The *Clinique* is one of the most important clinics in Paris. A number of the Fellows of the International College of Surgeons residing in Paris operate in this institution in general surgery and the specialties. It is in the neighborhood of the Latin Quarter, near the *Camp de Mars* and the Eiffel Tower.

In the clinic, rooms have been set aside by Dr. Viala where visitors may gather for rest and relaxation. Up-to-date scientific journals in French and other languages are available. The rest rooms have baths and all other comforts. Secretarial service is also provided.

Dr. and Mrs. Viala visited the United States last spring and attended the Inter-



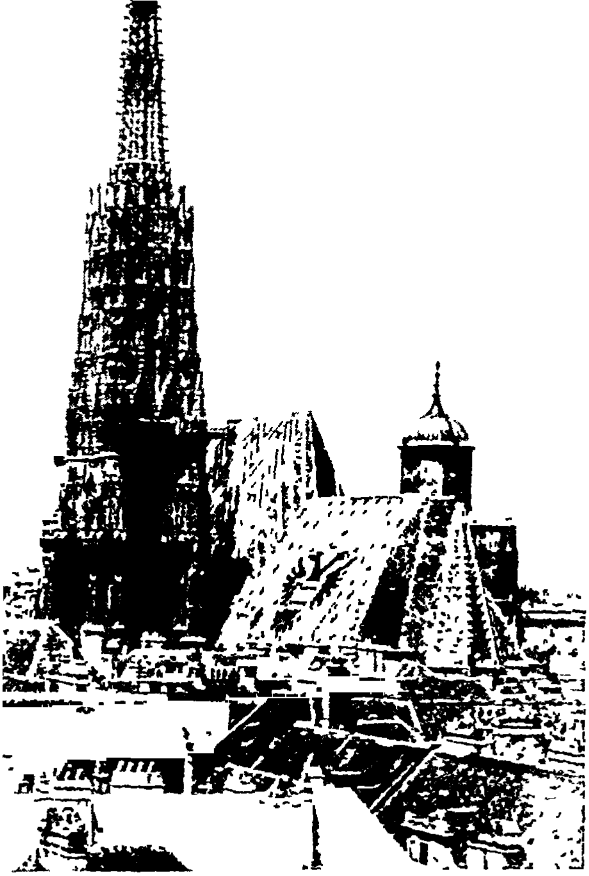
Entrance Hall
Center of Information
and Reception
French Section
International College
of Surgeons
at
La Clinique de l'Alma
Paris, France

national Congress in Los Angeles. They were warmly received everywhere, as was only due to Dr. Viala's surgical status and to the innate social gifts of both. On their way across the country they stopped off in Chicago and made a tour of the International Surgeons' Hall of Fame and the College Home. Impressed by what he saw, Dr. Viala began to ponder the possibility of doing something comparable, on a scale to suit the situation, in Paris.

Upon his return to his home he began to organize this center, which is now complete. His purpose is to make visitors from foreign countries comfortable and give them a sense of home, and he warmly urges all the members of the College who travel abroad and come to Paris (and who, traveling, does not come to Paris?) to take advantage of the facilities which have been established precisely for the purpose of serving them.

The College congratulates Dr. Viala upon his far-sighted thoughtfulness and is grateful to him for establishing this center of information and hospitality.

Special salon at the Clinique de l'Alma reserved for visiting members of the International College of Surgeons



Doorways to Europe

MIDSUMMER EUROPEAN POSTGRADUATE TOUR

July 17 - August 27

By this time the membership of the United States Section of the International College of Surgeons will have received an attractive brochure which describes the midsummer postgraduate clinical tour, with a heading of *Doorways to Europe.*

The clinical attractions for the surgeons making this tour are excellent, but this brief article is given over to the added attractions that all of us should be interested in. It is really an historical travelogue.

Going to Holland for our initial visit takes us into a land whose history goes back more than one thousand years. It will be our good fortune to see how Holland was built from the marshes and lowlands, and how modern Holland has saved itself from the sea with one of the most astonishing engineering projects of modern times.

Denmark dates back to the same period, and was at one time one of the great seafaring countries of the world. All of us know the great feats of the Vikings. Had the Vikings possessed the characteristics of the modern Dane, they would have undoubtedly settled in North America well before the Spanish and English. There will be much to see in this country that gave to the world Hans Christian Andersen and the setting for one of Shakespeare's great plays. From a scenic standpoint, it has much to offer.

Perhaps the outstanding scenic portion of this tour will be in Norway. Oslo, our

Above: What the Eiffel Tower is to Paris, the Gothic spire of Stephen's Cathedral is to Vienna, a city evocative of thoughts of its greatness in surgery as well as in music

Below: The market square in Helsinki, with, in the background, its famous Great Church

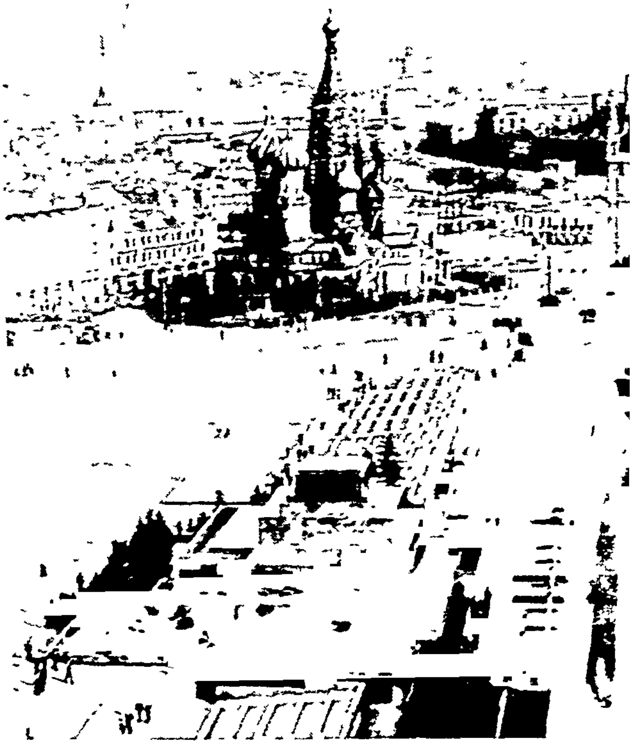
port of call, was founded by King Harald in 1048. The Norwegians have a great history, and contributed much to the seafaring world from the eleventh century on. Our time is well arranged in this delightful country. The Norwegians should be remembered for their great courage in withstanding the Germans in World War II.

The visit to Sweden will be much more of the same—for here, too, we will have the opportunity of going through the centuries—seeing the progress that this country has made.

Finland's capitol, Helsinki, is one of the finest cities of Europe. It is known as the *White City of the North,* and had its founding more than four hundred years ago. The amazing thing about this land is that less than one per cent of all people are illiterate. Finland is known for its great courage and its national integrity. There is a great bond between this country and the United States of America. Not only will we want to see all that is possible of their national life, but here we will meet with one of our strongest national Sections.

Russia may be approached as a great question mark! Certainly there will be much to see in Leningrad, which is a beautiful city. Peter the Great was responsible for its building, and today it still stands as one of the most attractive of all the European cities. Moscow, the capitol, is situated in the Volga Valley. Historically, it goes back to the twelfth century. It is my hope that we will have an opportunity of seeing how the Russians live in these two cities. We also hope, as professional men, to have the opportunity of seeing work in their hospitals.

From this point we go on to cities we know well—Vienna, Munich and Paris.



Above: Red Square in Moscow, with many-domed St. Basil's Cathedral, the red-brick walls of the Kremlin and, in the foreground, the Lenin-Stalin Mausoleum

Below: Outdoor restaurant in Amsterdam on the bank of one of its picturesque canals

THIRD LECTURE SERIES

1958-1959

School of the History of Surgery and Related Sciences
International Surgeons' Hall of Fame
1524 Lake Shore Drive, Chicago

LECTURES BEGIN AT 8:00 P.M.

OCTOBER 21, 1958 . . . . *"Changing Concepts of Disease"—Dr. Ilza Veith, Associate Professor in the History of Medicine, Department of Medicine, University of Chicago, Chicago, Illinois*

NOVEMBER 11, 1958 . . . . *"Epochs in the History of Medicine"—Dr. Morris Fishbein, Professor Emeritus of Medicine, University of Chicago and University of Illinois, Chicago, Illinois*

DECEMBER 2, 1958 . . . . *"The History of Hospitals"—Dr. Charles U. Letourneau, Director, Program in Hospital Administration, Northwestern University, Chicago, Illinois*

JANUARY 13, 1959 . . . . *"The History of Gynecology"—Dr. A. F. Lash, Clinical Professor of Obstetrics and Gynecology, University of Illinois, Chicago, Illinois*

FEBRUARY 3, 1959 . . . . *"The History of Neurosurgery"—Dr. Percival Bailey, Distinguished Professor of Neurology and Neurological Surgery, University of Illinois, Chicago, Illinois*

FEBRUARY 24, 1959 . . . *"Notes About the Role of Physicians in Our Military History"—Dr. George S. Lull, Assistant to the President, American Medical Association, Chicago, Illinois*

MARCH 24, 1959 . . . . . *"Evolution of Medical Illustration"—Thomas S. Jones, M.S., Emeritus Professor of Medical and Dental Illustration, University of Illinois, Chicago, Illinois*

APRIL 14, 1959 . . . . . . *"The History of Surgery of Bones and Joints"—Dr. Edward L. Compere, Professor and Chairman of the Department of Orthopedic Surgery, Northwestern University and Chicago Wesley Memorial Hospital, Chicago, Illinois*

MAY 5, 1959 . . . . *"The Evolution of Otorhinolaryngology and Bronchoesophagology" — Dr. Francis L. Lederer, Professor and Head of Department of Otolaryngology, University of Illinois, Chicago, Illinois*

MAY 21, 1959 . . . . . . *"The History of Plastic Surgery"—Dr. Wayne B. Slaughter, Clinical Professor in Charge of Plastic Surgery, University of Wisconsin (Madison) and Stritch School of Medicine, Loyola University, Chicago, Illinois*

Postgraduate Courses and Conferences

INTERNATIONAL COLLEGE OF SURGEONS

AUSTRIA

VIENNA

The American Medical Society of Vienna
and
The University of Vienna

Postgradute Courses in Surgical Science Provide Opportunities for Postgraduate Work in Various Fields of Surgery

For information write: Dr. M. Arthur Kline, F.I.C.S., Secretary, American Medical Society of Vienna, 11 Universitätsstrasse, Vienna, Austria.

* * *

FRANCE

Special Course in Urologic Surgery
May 14-16, 1959
Prof. Dr. Raymond Darget, F.I.C.S.
of the University of Bordeaux
at the
Cancer Prevention Center and the
Clinic Saint-Augustine
BORDEAUX

Subjects

Treatment of tumors of the bladder, including radium therapy and palliative measures such as denervation of the bladder and uretero-intestinal anastomosis.

Treatment of malignant prostatic tumors by perineal ischio rectal implantation of radium needles.

The course will include operations, films, presentation of patients and results of treatment.

Number of participants is strictly limited. Those interested should write promptly to

Prof. Dr. Raymond Darget
17, rue Castéja
Bordeaux, France

SPAIN

BARCELONA

Hospital de la Santa Cruz y San Pablo Surgical Service

Dr. Jose Solar-Roig, F.I.C.S.
DIRECTOR

ADVANCED COURSES IN SURGERY OF THE DIGESTIVE TRACT
(For Postgraduates)
Under the Auspices of the
International College of Surgeons

UROLOGIC INSTITUTE

Dr. A. Puigvert, F.I.C.S., Director

COURSE XX

POSTGRADUATE SEMINAR
on
Diseases of the Bladder
Symptomatic and Surgical Aspects

April 20-25, 1959

This seminar, lasting six full days, from 8:30 a.m. to 7:00 p.m. will include practice in endoscopy and urography.

Those registered for the seminar will be limited in number and may continue their work at the Institute for three months.

For further information address: Secretaria del Instituto de Urología, Pabellón de la Asunción, Hospital de la Sta Cruz y San Pablo, Barcelona 9, España.

United States Section

THE PRESIDENT'S MESSAGE

The New Directory and Other Items of Interest

Dr. Edward L. Compere

If you have not already sent your check for the new *Directory* of Members and Fellows of the International College of Surgeons, I do hope that you will stop right now, get out your checkbook, write the check, and send in your order. Enough orders have been received to make it possible to print the *Directory* in a very simple form. If we are to make it more attractive, we will need to have orders from almost all the members. I am so pleased that we are getting ready to publish this *Directory* that I have ordered three copies—one for my office, one for my home, and one to keep at my summer cottage in Michigan. This *Directory* is something that we have long needed and just what many of you have been asking for.

New Members

I am mailing a special letter as my personal message to each member of the United States Section of the International College of Surgeons. Among other things, I am requesting each member of the College to make a real effort to obtain an application for membership from at least one other surgeon who is highly qualified and who would bring credit to our College. I should like very much to see at least a thousand new members brought into the College during my term as president. This is entirely within the realm of possibility if each member will cooperate. I cannot overemphasize the fact, however, that we want as new members only those surgeons who have had adequate training and who are otherwise thoroughly qualified.

Nomina Anatomica

No association of surgeons could more appropriately support the movement to adopt an international terminology than the International College of Surgeons. Language differences still constitute the greatest barriers to understanding among the people of different countries around the world. *Nomina Anatomica* is the title chosen for the latest anatomical terminology which is based on Latin, the terms having been selected by the International Anatomical Nomenclature Committee (I.A.N.C.). Latin is still the most useful international language for scientific purposes. Insofar as possible, the Committee has chosen the terms which are most readily translatable into modern languages.

This matter should be of interest to our regents and others who have been working actively for the International College of Surgeons and are always on the alert for projects which the College could sponsor to advance understanding and good will among doctors in various countries around the world, the promotion of which would add to the prestige of the College.

I am suggesting that the College consider the advisability of boldly sponsoring and widely advertising this new international terminology.

The revised *Nomina Anatomica* was

published and distributed by Williams and Wilkins of Baltimore, after it had been restudied thoroughly by the International Anatomical Nomenclature Committee in 1956. Most of the terms used would be familiar to anyone who understands medical terminology and especially to the doctor who has managed to retain a little of the Latin that he studied in high school. Thus, *articulatio* refers to joints, *myology* to muscles, and *systema nervosum* would be recognized immediately as referring to the nervous system. I should like to invite those who read this message to communicate with me. If you are interested in this subject, I will write more about it in future messages.

Southern California

Earlier this month I spent about ten days in California. The primary purpose of my trip was to meet with the regent, vice-regents and the credentials committee, and to attend, as guest speaker, the annual dinner and business meeting of the Southern California Chapter of the International College of Surgeons. Regent Joseph de los Reyes, the vice-regents and other members gave Mrs. Compere and me a very delightful time. We thoroughly enjoyed our visit. I am glad to report that the hearts of our colleagues in Southern California are strong and they are trying to make this one of the best chapters of the International College of Surgeons in the United States.

Importance of Vice-Regents

It has become increasingly obvious to most of us here at the Home Office that more vice-regents are needed in almost every state. There should be a vice-regent in every major city and in each area where we have a nucleus of members. The vice-regents are very important to the College. We depend upon them for information about applicants for Associate Membership or Fellowship. The regent may find it necessary to call a vice-regent on the telephone to get information about a candidate who lives in an area that is too far away for the regent to know him at all. The growth of the College depends upon the active support of the vice-regents in interesting the best surgeons in each area of the country in the work of the International College. Each vice-regent should be concerned to point out the ideals of the International College and the work which we are doing around the world to those surgeons of his acquaintance who would be of the greatest help and strength to us if they became members. Our future depends to no small degree upon the activity and help of the vice-regents, and within the next few weeks we expect to appoint many more of them throughout the country.

Edward L. Compere

$200,000/$600,000 Limits of Liability are now available to members covered under the ICS Group Malpractice Insurance Plan.

Please write to John L. Krause, Administrator, 1576 Sherman Avenue, Evanston, Illinois, for rates and further details regarding the Plan.

THE TREATMENT OF THYROID DISEASE

Moderator:

Arnold S. Jackson, M.D., F.A.C.S., F.I.C.S., Madison, Wisconsin

Participants:

Seymour W. Meyer, M.D., F.A.C.S., F.I.C.S., Jamaica, New York

Max Michael Simon, M.D., F.A.C.S., F.I.C.S., Poughkeepsie, New York

Joseph P. Alvich, M.D., F.A.C.S., F.I.C.S., Bronx, New York

George A. Degenshein, M.D., F.I.C.S., Brooklyn, New York

Lindon Seed, M.D., F.I.C.S., Chicago

THE THERAPY OF ADVANCED BREAST CANCER

Moderator:

Henry Patrick Leis, Jr., M.D,. F.A.C.S., F.I.C.S., New York City

Participants:

Ralph R. Coffey, M.D., F.A.C.S., F.I.C.S., Kansas City, Missouri

Maurice M. Black, M.D., F.C.A.P., New York City

Henry M. Selby, M.D., F.A.C.R., New York City

George C. Escher, M.D., New York City

Oscar Hugh Fulcher, M.D., F.A.C.S., F.I.C.S., Washington, D.C.

AFTERNOON

Presiding:

William H. Godsick, M.D., F.A.C.O.G., F.I.C.S., New York City

Secretary:

Charles L. Reigi, M.D., F.A.C.S., F.I.C.S., Staten Island, New York

PROBLEMS IN OBSTETRICS AND GYNECOLOGY

Moderator:

John George Mussio, M.D., F.A.C.O.G., F.I.C.S., Brooklyn, New York

Participants:

Gilbert F. Douglas, M.D., F.A.C.O.G., F.A.C.S., F.I.C.S., Birmingham, Alabama

Magin Sagarra, M.D., F.A.C.O.G., F.A.C.S., F.I.C.S., New York City

Martin L. Stone, M.D., F.A.C.O.G., F.A.C.S., F.I.C.S., New York City

Ernest F. Purcell, M.D., F.A.C.O.G., F.I.C.S., Trenton, New Jersey

Harry J. Greene, M.D., F.A.C.O.G., F.A.C.S., Brooklyn, New York

Edward Solomons, M.D., F.R.C.P.I., F.R.C.O.G., F.A.C.O.G., F.A.C.S., Brooklyn, New York

THE MANAGEMENT OF PATIENTS WITH MULTIPLE INJURIES

Moderator:

Edward L. Compere, M.D., F.A.C.S., F.I.C.S., (Hon.), Chicago

Participants:

Anthony F. DePalma, M.D., F.I.C.S., Philadelphia

Arthur A. Michele, M.D., F.A.C.S. F.I.C.S., Brooklyn, New York

Theodore K. Himelstein, M.D., F.I.C.S., New York City

Samuel Thomas Glasser, M.D., F.A.C.S., F.I.C.S., New York City

Samuel Simon, M.D., F.A.C.S., F.I.C.S., Poughkeepsie, New York

James W. Watts, M.D., F.A.C.S., F.I.C.S., Washington, D.C.

PROBLEMS IN PROCTOLOGY

Moderator:

James Patrick Fleming, M.D., F.I.C.S.,
Rochester, New York

Participants:

Sylvan D. Manheim, M.D., F.I.C.S.,
New York City

Jack White McElwain, M.D., F.A.C.S.,
F.I.C.S., Amityville, New York

Lester S. Knapp, M.D., F.A.C.S., F.I.C.S.,
Buffalo, New York

J. Edwin Alford, M.D., F.A.C.S.,
Buffalo, New York

Con Armore V. Burt, M.D., F.A.C.S.,
F.I.C.S., New York City

Saturday, May 30, 1959

MORNING

Presiding:

Peter J. Timpone, Sr., M.D., F.I.C.S.,
Staten Island, New York

Secretary:

Gaspar M. Adamo, M.D., F.A.C.S., F.I.C.S.,
Long Island City, New York

RECONSTRUCTIVE SURGERY

Moderator:

D. McCullagh Mayer, D.D.S., M.D.,
F.A.C.S., F.I.C.S., New York City

Participants:

Jerome Gelb, M.D., F.A.C.S., F.I.C.S.,
West Orange, New Jersey

Michael L. Lewin, M.D., F.A.C.S., F.I.C.S.,
New York City

Stephen D. LoVerme, M.D., F.A.C.S.,
East Orange, New Jersey

Ross T. McIntire, M.D., F.A.C.S., (Hon.),
F.I.C.S., (Hon.), Chicago

THERAPY FOR INTRACTABLE PAIN

Moderator:

Juan Negrin, Jr., M.D., F.I.C.S.,
New York City

Participants:

Dante V. Bizzari, M.D., F.A.C.An., F.I.C.S.,
New York City

Francis S. Latteri, M.D., F.A.C.An.,
New York City

Gerald H. Klingon, M.D., F.A.C.P.,
New York City

Raymond W. Houde, M.D., New York City

CARDIOPULMONARY EMERGENCIES OF INTEREST TO THE GENERAL SURGEON

Moderator:

Samuel Alcott Thompson, M.D., F.A.C.C.,
F.C.C.P., F.A.C.S., F.I.C.S.,
New York City

Participants:

Irving S. Shiner, M.D., F.C.C.P., F.A.C.S.,
F.I.C.S., New York City

Adrian Lambert, M.D., F.A.C.C., F.A.C.S.,
F.I.C.S., New York City

Frank A. Gagan, M.D., F.C.C.P., F.I.C.S.,
Poughkeepsie, New York

Victor C. DeLuccia, M.D., F.C.C.P.,
F.A.C.S., F.I.C.S., New York City

AFTERNOON

BIOATOMIC MEDICINE AND CIVIL DEFENSE

Edwin J. Grace, M.D., F.A.C.S., F.I.C.S.,
Brooklyn, New York

COMMITTEE CHAIRMEN

Horace E. Ayers, M.D., F.A.C.S., F.I.C.S. (Hon.), New York City
GENERAL CHAIRMAN

Milton S. Weinberg, M.D., F.A.C.O.G., F.I.C.S., Jackson Heights, New York
CHAIRMAN, GENERAL ARRANGEMENTS COMMITTEE

Franklyn B. Theis, M.D., F.A.C.S., F.I.C.S., Nyack, New York
CHAIRMAN, ADVISORY COMMITTEE

Henry Patrick Leis, Jr., M.D., F.A.C.S., F.I.C.S., New York City
CHAIRMAN, SCIENTIFIC PROGRAM COMMITTEE

Magin Sagarra, M.D., F.A.C.O.G., F.A.C.S., F.I.C.S., New York City
CHAIRMAN, MOTION PICTURE COMMITTEE

Ernest G. Abraham, M.D., F.A.C.O.G., F.I.C.S., New York City
CHAIRMAN, SCIENTIFIC COORDINATING COMMITTEE

John G. Mussio, M.D., F.A.C.O.G., F.I.C.S., Brooklyn, New York
CHAIRMAN, PROCEDURE COMMITTEE

Gilbert M. Palen, M.D., F.I.C.S., Margaretville, New York
CO-CHAIRMAN, PROCEDURE COMMITTEE

Mrs. Magin Sagarra
Chairman
Women's Reception Committee

Sam Clayton, M.D., F.I.C.S., Kew Gardens, New York
CHAIRMAN, PUBLICITY COMMITTEE

Martin L. Stone, M.D., F.A.C.O.G., F.A.C.S., F.I.C.S., New York City
CHAIRMAN, REGISTRATION COMMITTEE

Charles H. Thom, M.D., F.A.C.O.G., F.A.C.S., F.I.C.S., Staten Island, New York
CHAIRMAN, HOSPITALITY AND RECEPTION COMMITTEE

ACCOMMODATIONS

AMERICAN PLAN	3 Day Rate Thurs.-Sun.	
Executive Room, Two Baths—New Bldg.	$91.00	☐
Super De Luxe Room—New Bldg.	85.00	☐
De Luxe Room—Main House	79.00	☐
Private Bath Room—Adj. Bldg.	67.00	☐
Semi-Private Bath—Adj. Bldg.	61.00	☐

A Registration fee of $5.00 per doctor will be added to your bill.

GRATUITIES: THE ABOVE RATES INCLUDE GRATUITIES FOR DINING ROOM AND CHAMBERMAID.

The above rates are per person, based on two persons in each room, from after lunch on Thursday to after lunch on Sunday. The Concord is an American Plan Hotel and the rate includes three full meals daily.

Please check accommodations desired.

CHILDREN'S RATE: $47.00 in same room as parents and includes gratuities and registration fees.

SINGLE OCCUPANCY: $5.00 daily additional.

A DEPOSIT OF $10.00 PER PERSON IS REQUIRED.

RESERVATION BLANK

TO CONFIRM RESERVATIONS. PLEASE SEND CHECKS AND RESERVATIONS TO: Concord Hotel, Kiamesha Lake, New York. ATT'N: International College of Surgeons. Please Make Deposit Checks Payable to: CONCORD HOTEL.

NAME ....

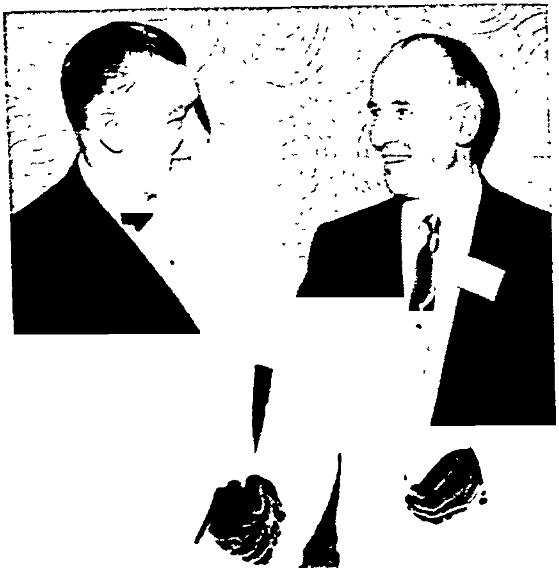
ADDRESS ....

Number in Party............Ladies........Gentlemen........

Florida State Chapter Elects Officers

SOUTHEASTERN REGIONAL MEETING

United States Section, International College of Surgeons



Dr. Harold O. Hallstrand (left) congratulating Dr. Claude F. Mentzer of Miami upon his election as president of the Florida State Chapter of the College

At its meeting in Miami Beach on January 4, 1959, the Florida State Chapter elected the following officers for the current year:

PRESIDENT

Dr. Claude G. Mentzer, F.I.C.S., D.A.B., Miami

VICE-PRESIDENT

Dr. Alfred G. Levin, F.I.C.S., D.A.B., Miami

SECRETARY-TREASURER

Dr. Herbert W. Virgin, Jr., F.I.C.S., Miami

MEMBERS OF THE BOARD

Dr. Frank L. Meleney, F.A.C.S., F.I.C.S., D.A.B., Miami

Dr. Carl McLemore, F.A.C.S., F.I.C.S., D.A.B., Orlando

Dr. H. Quillian Jones, F.A.C.S., F.I.C.S., Fort Meyers

Dr. James A. McLeod, F.I.C.S., D.A.B., Orlando

Dr. A. H. Lisenby, F.I.C.S., Panama City

Dr. Harold O. Hallstrand, F.A.C.S., F.I.C.S., D.A.B., of Miami, the general chairman of the Southeastern Regional Assembly held in Miami Beach January 4-7, 1959, is being generally and enthusiastically congratulated upon the success of the Assembly and upon the effectiveness of his efforts in organizing and coordinating the complex machinery which resulted in a memorable surgical meeting.

Dr. Homer F. Marsh, dean, University of Miami School of Medicine, welcoming guests to Assembly banquet

Dr. Homer F. Marsh, dean of the University of Miami School of Medicine, delivered the welcoming address at the banquet, which was held on Tuesday evening, January 6, at the Bal Masque Room of the Americana Hotel and climaxed the social activities of the Assembly.

Indiana Regent's State Meeting

INDIANAPOLIS, INDIANA

May 6, 1959

Dr. John D. Van Nuys, Dean
Indiana University Medical Center

The Indiana Division of the United States Section of the International College of Surgeons will hold its Annual Regent's Meeting at the Indiana University Medical Center in Indianapolis on May 6, 1959.

The scientific session will begin at 8:55 a.m. and continue to 4:30 p.m., with luncheon at the Student Union.

PROGRAM

Address of Welcome
JOHN D. VAN NUYS, M.D., Dean, Indiana University Medical Center

Anesthetic Risk Evaluation of Surgical Patient
CYRIL TAYLOR, M.D., Instructor in Anesthesia, Indiana University Medical Center

Perforation of G. I. Tract in Infants
ROSCOE E. MILLER, M.D., Associate Professor of Radiology, Indiana University

Thyroid Malignancy
GOETHE LINK, M.D., F.I.C.S., Indianapolis

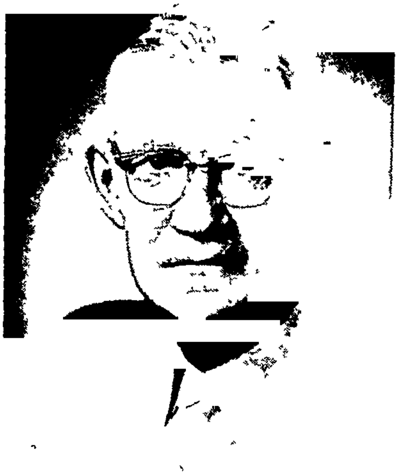
Indications for Surgical Treatment of Peptic Ulcer and Advisable Surgical Procedures
CLAUDE J. HUNT, M.D., F.A.C.S., F.I.C.S., Kansas City, Missouri

Surgical Treatment and Diagnosis of Breast Tumors
STANLEY BATTERSBY, M.D., Professor of Surgery, Indiana University

Types of Colostomies and Indications
PETER ROSI, M.D., F.A.C.S., F.I.C.S., Associate Professor of Surgery, Northwestern University Medical School, and Professor of Surgery, Cook County Graduate School, Chicago

Surgical Evaluation of Epigastric Pain
J. K. BERMAN, M.D., F.A.C.S., Associate Professor of Surgery, Indiana University

Indications for Open Reduction of Fractures
GEORGE GARCEAU, M.D., F.A.C.S., F.I.C.S., Professor of Orthopedics, Chairman of Orthopedic Department, Indiana University Medical Center

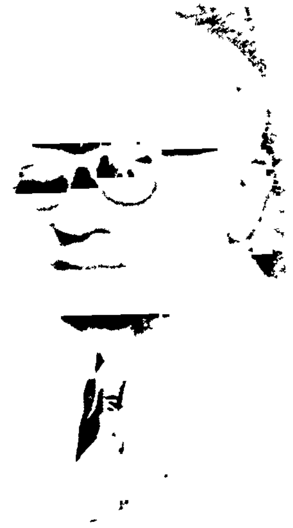


Dr. Paul E. Haley
Regent

Paul E. Haley, M.D., F.I.C.S., of South Bend, is Regent of Indiana for the United States Section of the International College of Surgeons.

Program Committee

Walter P. Moenning
M.D., F.I.C.S.
Indianapolis



Emmett B. Lamb
M.D., F.A.C.S., F.I.C.S.
Indianapolis

Simon Reisler
M.D., F.I.C.S.
Indianapolis
Secretary

John W. Emhardt
M.D., F.A.C.S., F.I.C.S.
Indianapolis
Chairman
Arrangements and Program Committees

Robert D. Fry
M.D., F.I.C.S.
Indianapolis
Treasurer

SOCIAL PROGRAM

There will be a banquet in the Travertine Room of the Sheraton-Lincoln Hotel, highlighted by an address on *Sputniks, Space and You* to be given by Robert J. Kryter, consulting engineer.

The banquet will be preceded by a social hour.

The regent and the committee extend a cordial invitation to all surgeons, medical practitioners, their ladies and guests.

Journey Into Freedom

EXCERPTS FROM A TWENTIETH CENTURY BIOGRAPHY
PART I

JOSEPH ANTHONY MALEJKA, M.D.
NEW YORK CITY, NEW YORK

Dr. Joseph Anthony Malejka

It was the year 1946 and my desire to leave Poland was increasing from month to month.

I was twenty-one years old. In a certain sense I was many years older, for, having been shipped to Germany at sixteen to undertake slave labor on a German farm, having escaped and then served over three years as a courier with the Polish underground, I had learned many facets of the art of self preservation. I had also seen my parents' farm confiscated by the Germans, my father deprived of his livelihood as a teacher, and my young friends disappear, some never to be heard from again, others to rot in German concentration camps or to return home broken both in spirit and in body.

Thus the experiences of war had matured me beyond my twenty-one years. However, in another sense I was typical of any youth of twenty-one. I was filled with dreams for the future and with longing for higher education and for an opportunity to prepare for the profession I had chosen, that of medicine. And, above all, for many years I had hoped and prayed and planned to achieve individuality and happiness in a world with loyalty to both country and God.

My father had been opposed to my departure. What would I do in Germany, providing I were successful in passing the iron curtain? Where would I go, a youngster, a stranger in the country, completely without friends to guide me? My determination to work, earn money and study he felt to be immature romanticism. I argued that I could get help from UNRRA, which had founded a University in Munich. After several weeks of persuasion, however, my father at last withdrew his objection, and by June I had therefore both my father's and mother's blessing.

Then began a week of preparation. This consisted of packing cigarettes and various food conserves which we had received once a month from UNRRA in the year after the war. I wished to carry as little as possible and yet have sufficient food to last me two weeks. In addition, I had some German money which I knew was still recognized as valid in occupied Germany. Also I had the sum of fifteen American dollars which has been sent after the war by friends in England to my relatives. This money I had sewn into a seam in my trousers and I knew I would resort to it only in the direst emergency. A tailor made me a new sports suit with wide pockets and this enabled me to take about twenty packages of Camel cigarettes with me. My final preparations included the packing of two changes of shirts, underwear and socks and a generous supply of soap.

I was fortunate in having authentic information concerning means of crossing. There were three main routes. One was along the Baltic coast; the second along the mountain range in the south of Poland, and the third through Czechoslovakia to the American zone. These were used by the thousands of Poles who traveled to join their families or were political refugees. These routes were by no means known to the public. Yet information was available to any interested person. My future experience was to prove that it was far from easy to cross the border at any of these points. Yet, with persistence and the prayers of those behind, especially my mother's, I did succeed.

During the period of preparation and the initial stages of my escape I was fortunate in having a close friend. I shall call him Henry. The same age as I, he had been forced into uniform by the Germans, sent to the front and then, when wounded, transferred to the occupation forces in France. After VE day, he was captured, sent to a PW camp for a few weeks and finally allowed to return home to Silesia. I urged him to accompany me across the border. But he was tired and unwilling to leave home after his long absence. Whereas I had been fortunate in being able to finish my secondary education, he had not, and now he felt the wiser course for him to follow was that of completing his education and entering the University as a student of commerce. However, though reluctant to accompany me across the border, he was most desirous of assisting me in every way he could to get me to the actual point where I would cross. In this way he would be able to bring back news of my success or failure to my parents. Also, two of us traveling together would present a normal picture of two student tourists traveling in Western Poland.

Thus, on the morning of Saturday, July 6, 1946, with my initial preparations completed, I said goodby to my parents, my home, the traditions, friends, way of life and even the language which had nourished my twenty-one years. At the moment of saying farewell to my parents and

Dr. Joseph Anthony Malejka, now a third-year surgical resident at Beekman-Downtown Hospital in New York City, was the recipient of the 1956-1957 international scholarship offered by the Woman's Auxiliary to the United States Section of the International College of Surgeons. He spent that year as a fellow and assistant resident in surgery at the Albert Einstein College of Medicine and the following year as resident in general surgery at Beth Israel Hospital in New York City. In September 1957, Dr. Malejka read one of three resident award essays presented at the Twenty-Second Annual Congress of the North American Federation of the International College of Surgeons. His paper, The Metabolic Response to Surgery, *was accepted for publication by the* Journal of the International College of Surgeons *November 5, 1957, and published in September 1958.*

Woman's Auxiliary

THE PRESIDENT'S MESSAGE

Anticipating Pleasant Experiences

Mrs. Earl Ingram Carr

Tenaciously, your president's message has held to the theme of membership in the Woman's Auxiliary. The incontrovertible reasons for belonging, the advantages, the usefulness and purpose of the organization all have been set forth repeatedly.

There is more, however, to this international organization than its major project, the furthering of foreign exchange scholarships. There is Glamour spelled with a capital "G" and a "u."

The international meetings are held in the most fascinating cities in the world. And you, as a member of the Auxiliary, can attend with full status the Congress of the International College of Surgeons in Rome a year from this May. It is our hope that our Auxiliary will have a large representation at this distinguished conclave.

The setting for this meeting conjures many happy recollections for those who have been in Rome and offers a delightful vista of new experiences for those who will be visiting this historic city for the first time.

Rome's resurgence since the dark days of World War II has been amazing. Its economy, reflecting, as it does, the whole of Italy, has been bounding along at a sports-car pace. The romantic and historic aura attached to Rome rivals that of Paris. International travelers, returning to their homes, are filled with wonderment at a city that emerges fresh and sparkling, no matter what the adversity.

Its society glitters with high fashion and sophisticates who are alive to the stringencies of the nuclear age. Its resilient economy seems destined to spiral to new heights, and it is very probable that it will be experiencing the full impact of prosperity by the time we arrive a year from May.

Aside from the many elegant social events that will encompass the meeting, you must plan now to allot ample time for leisurely sightseeing. There is nothing quite like a sunset in Rome when the domes of this ancient city are bathed in rose-colored hues.

The food in Rome is satisfying to the palate of a gourmet. American opinion of Italian food is mistakenly centered on such things as minestrone, spaghetti, risotto and ravioli. And I must not forget pizza. True Italian cuisine is superb. It has a way of upsetting the most stubborn caloric intentions. In fact, to the diet-conscious, it presents a seemingly endless array of pitfalls. You might declare a

Memento of Florida GLAMOUR: Mrs. William G. Thuss of Birmingham, Alabama, Mrs. Edward L. Compere of Chicago and Mrs. Arnold S. Jackson of Madison, Wisconsin, presenting winner's trophy to jockey at the special race honoring the International College of Surgeons at Tropical Racetrack Park, Miami, on January 5, 1959

moratorium on calorie-counting if you are planning the Rome trip. A gastronomical delight that will serve as a conversational piece for years to come is *Chicken Nero,* flamed in cognac and laurel, with *Salad Messallina.*

I, for one, am looking forward to a drive down the Via Appia, to a stop at the Catacombs of Saint Calixtus, and to dinner at the restaurant of Saint Calixtus.

Much has been written about the change in the Vatican since the enthronement of Pope John XXIII. It is quite possible that we will all get a glimpse of the new Pontiff during our visit. It has been noted that since his election the Holy Father has mingled more with the people of Rome than is the custom of the Popes. This charming informality and gregariousness has no doubt communicated itself to the already generously hospitable Italian people.

You can see that the trip to Rome is the equivalent to an unforgettable experience.

Ruth Smith Carr

I am interested in furthering the program of the Auxiliary to the International College or Surgeons. Enclosed is my check ($10.00 per member) covering membership(s) for the following:

NAME:

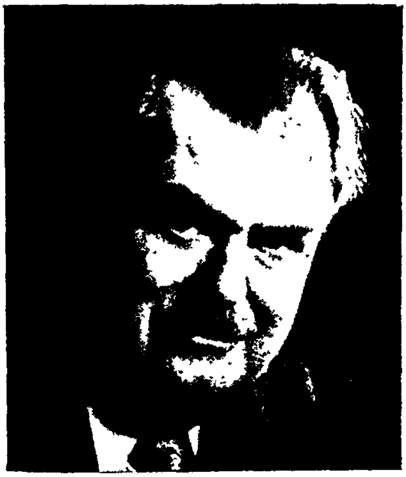
ADDRESS:

Make check payable to The Woman's Auxiliary, United States Section, International College of Surgeons, 1516 Lake Shore Drive, Chicago 10, Illinois.

Section News

AUSTRIA

Seventieth Birthday of President Schoenbauer Widely Celebrated



Prof. Dr. Leopold Schönbauer, F.I.C.S.
President, Austrian Section

On November 13, 1958, one of the best-loved surgeons of Austria, **Prof. Dr. Leopold Schönbauer** reached his seventieth birthday. The universally renowned professor and president of the Austrian Section of the International College of Surgeons was honored by his many disciples, students and friends, and was congratulated by the Austrian government and the municipality of Vienna.

Prof. Schönbauer was born in a small town in lower Austria, one of a long line of medical men, his great-grandfather, grandfather and father having been physicians. After college and university studies, he received the Doctor's degree in 1914 at Prague (C.S.R.) *sub auspiciis imperatoris*, the highest distinction a university student could acquire at that time.

During World War I he served at the front with a group of surgeons from the Eiselsberg Clinic in Vienna. Prof. Eiselsberg noticed Schönbauer's aptitude for scientific work and his exceptional surgical skill, and, at the end of the war, was pleased to have him join his clinic. In 1924 Schönbauer received the *venia legendi*, and in 1930 took over the surgical section of the Vienna Community Hospital at Lainz. Three years later he became a university lecturer, and on April 1, 1939, he was appointed Chief of the First Surgical University Clinic in Vienna, succeeding Eiselsberg and Ranzi.

Prof. Schönbauer immediately applied all his great energy and imposing creative power to his clinical work. Attracted by his strong personality and talent for organization, many young surgeons came to his clinic for training and to benefit from his far-reaching surgical experience. With sure judgment Prof. Schönbauer selected the most promising of these young men, and together with them and older surgeons who had been at the clinic, built up an important surgical school.

World War II broke out a year after he had taken over the clinic. Now Schönbauer's work became even more extensive. The clinic was enlarged, and a section for cerebral injuries was added. At that time more than a thousand wounded or otherwise sick people were entrusted to his skill. When, in 1945, Vienna was heavily menaced, Prof. Schönbauer guarded the large hospital and clinic with personal courage and foresight. He saved the sick and wounded from hunger and imprisonment. Later, Schönbauer became director of the general hospital in Vienna, and was elected Rector Magnificus of the University of Vienna for the year 1953-54.

Schönbauer's special field is neurologic surgery, to which Cushing had introduced him in America in 1924. But he has made himself an excellent master of all other branches of surgery, which he practices. Therefore, it is understandable that his scientific papers, which number nearly three hundred, report upon the entire sphere of surgery.

Prof. Schönbauer is particularly interested in the history of medicine and surgery. After World War II he was therefore appointed Director of the Institute for Medical History at the University of Vienna. His book *The Medical Vienna* testifies to his competence in this field.

But Prof. Schönbauer is not only a surgeon renowned far beyond the Austrian frontier and a successful clinical teacher. His best and most striking characteristics are his humanity, his kindness, and, most of all, his great readiness to help all mankind. We, his disciples, have always admired his efforts to help not only the sick people entrusted to his care, but others, often quite unknown, who were in trouble and distress. Especially during the war and after, he was esteemed in Vienna for his charitable work. His sympathetic heart prompts him always to assist others by word and deed, not only as a physician, but as a human being.

P. Kyrle
VIENNA

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ogy, the Philippine College of Physicians and the Quezon City Medical Society, held a scientific meeting in the auditorium of the Faculty of Medicine and Surgery of the University of Sto. Tomas, on Monday, November 3, 1958, upon the occasion of the visit of the Around-the-World Tour of surgeons sponsored by the United States Section of the International College of Surgeons.

The Rev. Fr. Jesus Diaz, O.P., Regent of the Faculty of Medicine and Surgery of the University of Sto. Tomas, delivered the invocation. **Dr. Virgilio Ramos**, dean of the Faculty of Medicine and Surgery at the University, made the welcoming address, followed by the opening remarks of **Dr. Jose Fores**, president of the Philippine Section of the International College of Surgeons.

After the scientific program, which was presented by the American surgeons, the closing remarks were made by **Dr. Francisco Guzman**, president of the Philippine College of Surgeons.

On Wednesday, January 21, 1959, the Philippine Section again held a large meeting in the Sto. Tomas Medical Auditorium, at which the guest speaker was **Prof. S. Obrador Alcalde**, professor and head of the department of neurosurgery of the *Universidad Central de Madrid* and the *Instituto de Investigaciones Medicas*, also in Madrid, who spoke on brain tumors.

On March 3, 1959, at the Club Filipino, the Section held its annual meeting. Discussion centered on a proposed amendment to the constitution so as to conform with the constitutional provisions of other Sections of the College. A committee was appointed, headed by **Dr. Basilio J. Valdes** and including **Drs. Miguel Canizares, Fortunato Guerrero, Francisco Guzman** and **Angel I. Reyes**, to study the matter.

On March 14, the Section was host, at the Philippine General Hospital Science Hall, to **Dr. E. E. Claxton**, assistant secretary of the British Medical Society, who addressed the meeting on socialized medicine.

PERU

The first meeting of the Peruvian Section for the current year has been scheduled for Monday, April 13, in Lima.

The meeting will open with an address by the president of the Section, **Dr. Francisco Granã, F.A.C.S., F.I.C.S. (Hon.)**, who will discuss the activities of the International College of Surgeons in the world today.

The scientific program will be as follows:

Partial Gastrectomy
DR. A. DIAZ UFANO
Torsion of the Testicles
DR. ALEJANDRO HIGGINSON
Plantar and Palmar Keratosis
DR. H. LANDAZURI

THAILAND

The Thailand Section of the International College of Surgeons will hold its mid-year meeting at the Chulalongkorn Pathological Auditorium in Bangkok on May 21, 1959.

The section is scheduling its annual meeting for November 2, 1959, in Bangkok, to coincide with the presence there of the International College of Surgeons Around-the-World Postgraduate Clinic Tour.

Major Gen. Sanguan Rojanavongse, M.D., D.Sc., F.R.F.P.S.G., F.I.C.S., is the president of the Thailand Section, and **Dr. Sem Pring-puang-geo**, F.I.C.S., is the secretary.

Medical News Front

DR. STANHOPE BAYNE-JONES HONORED

The board of directors of the **Passano Foundation** announces that **Dr. Stanhope Bayne-Jones** has been selected as the recipient of the five thousand dollar Passano Award for 1959.

This year's award is being presented to Dr. Bayne-Jones in recognition of a long and extraordinary service to science and medicine as educator and administrator in tasks of the highest importance, in all of which he has served with distinction and faithfulness. His most recent post was that of Chairman of the Secretary's Consultants on Medical Research and Education, Department of Health, Education and Welfare. The extensive and very significant report made to the Secretary of the Department has become known as the Bayne-Jones Report.

The award will be formally presented to Dr. Bayne-Jones during the convention of the American Medical Association in Atlantic City, when a reception and dinner will be held in his honor.

The Passano Foundation was formed in 1943, having as its sole purpose the encouragement of medical science and research, particularly that having a clinical application. It is sustained by annual contributions from The Williams & Wilkins Company, publishers of medical and scientific books.

DR. CASIMIR FUNK CELEBRATES BIRTHDAY

Dr. Casimir Funk

Dr. Casimir Funk, world-famous pioneer in vitamin research, marked his seventy-fifth birthday on February 23.

For the last two decades he has made New York his home, where he is still vigorously pursuing research on cancer and other medical problems. He is president of the Funk Foundation for Medical Research, a non-profit organization devoted to cancer and related research, supported in part by the U.S. Vitamin & Pharmaceutical Corporation.

Dr. Funk was born in 1884 in Warsaw, Poland, son of a prominent dermatologist. Educated in Switzerland, he received his Ph.D. in organic chemistry.

It was at the Lister Institute in London, in 1911, that Dr. Funk made his discovery which earned for him the accolade "father of vitamin therapy" and the acclaim of the world. He isolated from rice polishings a substance that cured beriberi, a ravaging oriental disease. Knowing this substance essential to life, he gave it the name "vitamine," later changed to vitamin. Shortly thereafter, he isolated crystalline nicotinic acid and other vitamin B components from extracts of yeast and rice polishings, and worked out the manner in which thiamine (vitamin B_1) is utilized by the body.

In the following years, Dr. Funk's research activities were expanded to include enzymes, amino acids, epinephrine, insulin, sex hormones, anterior pituitary hormones and other glandular extracts. He advanced the theory that minerals and vitamins are nutritionally interrelated and that, like vitamin deficiencies, mineral deficiencies are widespread and are usually multiple, rarely single. These concepts, once considered revolutionary, have now been confirmed, substantiated and adopted as universal knowledge.

TRAVEL GRANTS OFFERED BY THE AMERICAN GOITER ASSOCIATION

The Fourth International Goiter Conference will be held July 5-9, 1960, in London, England, under the auspices of the London Thyroid Club and the American Goiter Association. The American Goiter Association plans to make available to worthy candidates a limited number of travel grants for participants in this meeting.

Application blanks are available from John C. McClintock, M.D., 149½ Washington Avenue, Albany 10, New York, U.S.A.

Applications will be received until January 1, 1960.

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Director of Advertising for the International College of Surgeons, announces the appointment of three regional representatives for The Journal of the International College of Surgeons to aid in servicing advertisers and their agencies.

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In Memoriam

LEON GERIN-LAJOIE
M.D., D.Sc., Laval (Hon.) F.R.C.S.(C),
F.A.C.S., F.I.C.S. (Hon.)
1895-1959

Dr. Léon Gerin-Lajoie
D.Sc., F.R.C.S.(C.), F.A.C.S., F.I.C.S. (Hon.)

Dr. Léon Gerin-Lajoie, D.Sc., Laval (Hon.) F.R.C.S.(C), F.A.C.S., F.I.C.S. (Hon.), our beloved chief of the Department of Gynaecology at Notre-Dame Hospital, Montreal, Canada, died at the hospital on Sunday, February 15, 1959.

Having been one of his assistants in the Department since 1940 and having had the privilege of his teaching and his guidance during all those years, it is with great pride mingled with deep sorrow that I am recounting his *curriculum vitae*.

Dr. Gerin-Lajoie was professor of gynaecology at the University of Montreal, Faculty of Medicine; chief of the Department of Gynaecology of Notre-Dame Hospital; president of the executive committee of the medical board of Notre-Dame Hospital since 1954; president of the International Federation of Gynaecology and Obstetrics; president-elect of the World Medical Association; member of the Medical Council of Canada, and member of the Medical Advisory Committee of the Cancer Research Society.

Dr. Gerin-Lajoie was born on March 14, 1895, a member of a family long distinguished in the history of Canada.

Educated at Mont St. Louis College and at the University of Montreal, he was graduated from the Faculty of Medicine in 1918. He had received his infantry commission in the C.O.T.C. in 1916, and upon graduation was transferred to the Royal Canadian Army Medical Corps, in which he served until November 1919 as major. He then went to Paris to complete his medical education and to specialize in gynaecology.

Upon his return to Montreal, he continued his interest in that specialty and became one of its leading practitioners. He was founder and the first president of the Society of Obstetricians and Gynaecologists of Canada. He was a past vice-president of the Royal College of Surgeons of Canada, and was president of the Second World Congress of the International Federation of Gynaecology and Obstetrics, held in Montreal during June of 1958.

Dr. Gerin-Lajoie was a member and an honorary member of many scientific societies in Canada and abroad. He contributed about two hundred and fifty papers to the literature of his specialty, some of which he read at medical and surgical congresses, and all of which were published in the leading journals of the profession.

He was recipient of the following medals: for General Services, 1914-1918; Victory, 1918; His Majesty King George V on the occasion of his Jubilee, 1935; His Majesty King George VI on the occasion of his Coronation, 1937, and the Honorary Membership Medal of the Canadian Red Cross Society, 1946.

I beg to extend to Mme. Gerin-Lajoie and the family the heartfelt and respectful sympathy of the officers and members of the Board of Governors of the International College of Surgeons.

Jacques Gauthier, M.D.
MONTREAL

* * *

In Memoriam

MAURICE JEAN JOLY
M.D., F.I.C.S

Dr. Maurice Jean Joly, F.I.C.S., of Aubenas, Ardeche, France, died recently at the age of fifty-seven.

Dr. Joly was a valued member of the French Section of the International College of Surgeons since 1955.

He practiced as a general surgeon at the *Hôpital d'Aubenas*, contributed to French surgical literature, and was highly regarded by his associates.

He had been awarded the *Croix de Guerre* twice, and was a Chevalier of the Legion of Honor of France.

Prof. Dr. Raymond Darget, secretary of the French Section of the International College of Surgeons, has conveyed to the family of Dr. Joly the profound condolences of the French Section. We now wish to express the sincere sympathy of the officers and the members of the Board of Governors of the College and join our French colleagues in mourning the passing of our distinguished associate.

* * *

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Vol. 31 MAY, 1959 No. 5

General Surgery

Polydirectional Tomography and Its Application to Surgery

C. WANGERMEZ, M.D., F.I.C.S., M. MARTIN, M.D., M. BROUSSIN, M.D.,
J. WANGERMEZ, M.D., P. BONJEAN, M.D., AND M. BISCH, M.D.

BORDEAUX, FRANCE

TOMOGRAPHIC study is becoming more and more widely used as a method of investigation. Tomographic examinations of the lungs are well known, and there is absolutely nothing new to be said on this subject. It is particularly in the domain of the osteoarticular system, especially that of the skull, that important progress is being made every day. The tomographic study of bone has become so important that Dr. Herdner of Bourges, France, has devoted a volume of more than 400 pages to this subject.

Indeed, it is already possible to obtain interesting results with linear movement tomography. In this work, however, we should like to draw attention to the advantages of complex movements in examination of the osteoarticular system.

During the past three years we have had the advantage of possessing in our Central Electro-Radiological Service of the Pelligrin-Tondu Group, Bordeaux, a Sans and Porcher polytome (Fig. 1). This apparatus permits tomographic examination in all positions of the subject, vertical, horizontal and sloping. These sections may be staged millimeter by millimeter from the pressure plane (zero plane) up to 25 cm. above the same. The tilting of the examination plane and that of the effacement device are mechanically integral and operate simultaneously. What-

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From the Central Electro-Radiological Service of the Pellegrin-Tondu Group, Bordeaux (Principal Surgeon, C. Wangermez).

Submitted for publication May 22, 1958.

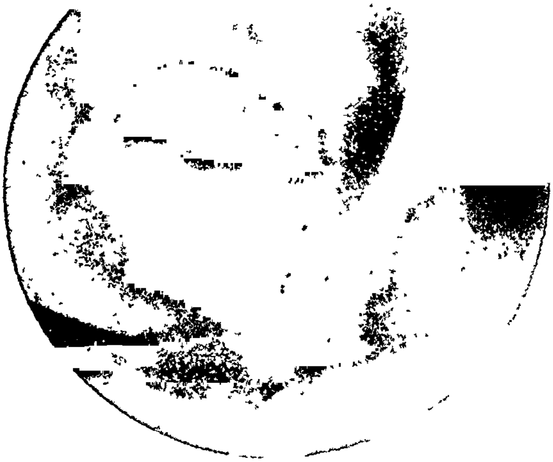

Fig. 11.—*Tomograph of bladder tumor.*

the shoulders can more easily be obtained by transverse tilting.

In this manner, one sees how advantageous it is to be able to orient the trajectory perpendicular to the orientation of the most troublesome elements.

It is extremely interesting to consider the relative distances (tube-section plane-film) in the event that enlargements are necessary. These may be desirable in certain cases of unsatisfactory results or, in other cases, to facilitate definition of the image and better detection of the pathologic abnormality.

On the polytome the distance between the tube and the section plane is invariable. It has been fixed at 110 cm., which is adequate to prevent distortions, yet not exaggerated, so that tomographs of extremely dense regions can be taken.

With most machines, on the contrary, one alters the position of the section plane in relation to the patient, and the tube-film distance is constant. This method has the grave inconvenience of producing an enlargement that becomes larger as the section plane moves nearer to the tube; in consequence, certain normal or pathologic elements take on an abnormal dimensional value.

With the polytome, on the contrary, one can obtain a rigorously constant enlargement, for one alters the position of the patient in relation to an aggregate "tube-section plane-film," of which the relative distances can be maintained constant throughout each examination.

The film-section plane distance is, however, adjustable by continuous movement of the film carrier, which can be easily placed either practically in contact with the examination plane and consequently at the shortest possible distance from the section plane, or far away from the latter.

In the first instance, one obtains the smallest possible enlargement; it will be constant or variable, as desired, according to whether one maintains the film-section plane distance constant, or whether one varies it in proportion to, and in the same direction as, the depth of the section. One can, in this manner, if one so desires, constantly use the shortest possible subject-film distance.

In the second instance, when the film carrier is moved away from the section plane, one obtains a direct enlargement of the image. The distance film-section plane being 110 cm. the maximum enlargement will be to one and a half times the original.

Nevertheless, the blurred effect, due to the penumbra which results from the dimensions of the tube, is accentuated according to the increase of the subject-film distance. It is absolutely essential, therefore to use a very fine focus tube (0.3 by 0.3 mm.) for enlargements, and *it is advisable to choose a double-focus* tube with a revolving anode, 0.3 by 0.3 mm., for the enlargement, and 1 x 1 mm. for the standard technics.

Before the appearance of the polytome, there was no body-section radiographic machine that offered a solution to the

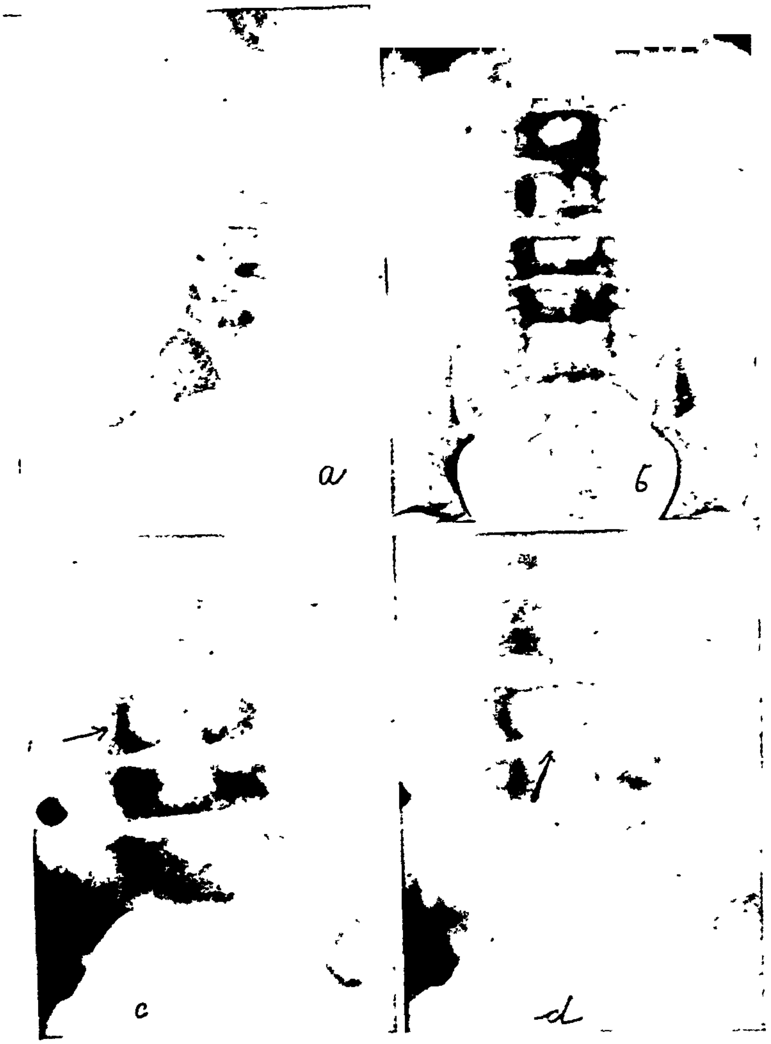

Fig. 12.—Child with Pott's disease. Standard views, *a* and *b*; polydirectional tomographs, *c* and *d*.

problem of oblique sections. When it came to obtaining a tomograph of an object of a certain length that was not parallel to the section plane, it entailed correcting the orientation by inclining the patient, the latter being very difficult to control; up to then, this procedure was the only one suitable for the exploration of the trachea, of the spine in cases of severe lordosis and, above all, of the terminal lumbosacral segment or the sacroiliac joints (anteroposterior view).

An essential principle of section radiographic study demands that the section plane be parallel to the plane of the film; therefore, one needs only to incline the latter in relation to its oscillation axis to obtain a section of equal inclination.

This technic is possible with the polytome. The film carrier is easily inclinable, and a thoroughly accurate reading of the inclination can be taken, which is by no means an unimportant question in

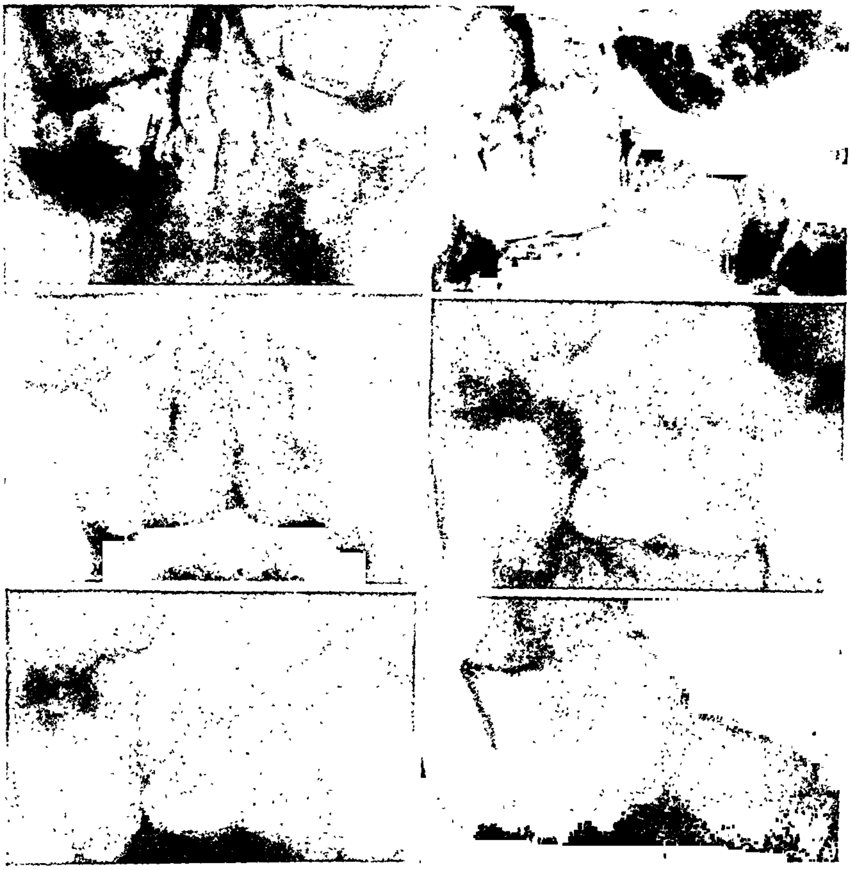

Fig. 13.—Nasopharyngeal polyps. *Above,* standard views; *center* and *below,* polydirectional tomograms.

the event that the examinations must be repeated.

This advantage of the polytome is essential. It facilitates a whole series of technical explorations which, until recently, were, if not impossible, at least extremely difficult to achieve.

Furthermore, should the film carrier come excessively near to the examination plane, a security device is provided that prevents all accidental contact of the film carrier with the examination plane. This device consists of a photoelectric cell fixed to the posterior surface of the examination plane.

The film carrier takes, as necessity requires, the movable antidiffusing screen and 35 by 35, 24 by 30, 18 by 24, and 13 by 18 cassettes. The cassettes of the three film sizes last mentioned are adjustable, following their two principal symmetric axes.

The polytome currently available is not fitted with an antidiffusing screen, which means that it is a little difficult to operate for the denser regions. Nevertheless the films are quite acceptable, provided they are strictly localized.

To illustrate the preceding observations, tomographs of several skeletal regions are presented. With the standard roentgen films these regions are difficult to obtain, yet by polydirectional tomographic means one can obtain some highly worthwhile results. It is obvious that, even with polydirectional tomographic methods employing a linear movement, one can obtain information superior to that given by ordinary roentgenograms, but the parasite trails caused by tilting are often a hindrance to interpretation. These trails completely disappear when complex movements are employed.

The turkish saddle can be easily studied on a standard lateral film; the tomographic technic, however, enables one to separate the right and left clinoids (Fig. 3), and, above all, it makes it possible to study the turkish saddle plane by plane from an anteroposterior position (Fig. 4).

We shall merely mention the temporomaxillary joint, as the advantage of tomographic study is obvious. The absence of linear effacement trails facilitates interpretation of the films (Fig. 5).

Generally speaking, joints may be favorably "tomographed" (Fig. 6). Particular mention must be made, however, of the advantage of tomographic sections in study of the sacroiliac joints (Fig. 7) and the sternoclavicular joints (Fig. 8).

We are not entirely satisfied with our films of the orbit and optical canals (Fig. 9). It is an examination that is rather difficult to make on a living subject. The results are, however, encouraging, and we hope to obtain better films when the polytome is equipped with a mobile screen. For all technical details, we have widely used the information given by the makers.

Finally, tomographic study of the atlas axis and the atloido-occipital joints, employing complex movements, has been described in our previous publications. This method enables us to obtain films of a quality that cannot possibly be acheived by any other current method (Fig. 10).

Purely as a matter of interest, as the chief concern of this work is osteo-articular tomographic study, we present an interesting section of a vesical tumor (Fig. 11) that shows complete disappearance of the image of the probe that was left in position during the radiologic examination.

A series of clinical cases has demonstrated clearly the superiority of polydirectional tomography over the standard films. At present, certainly, it is difficult

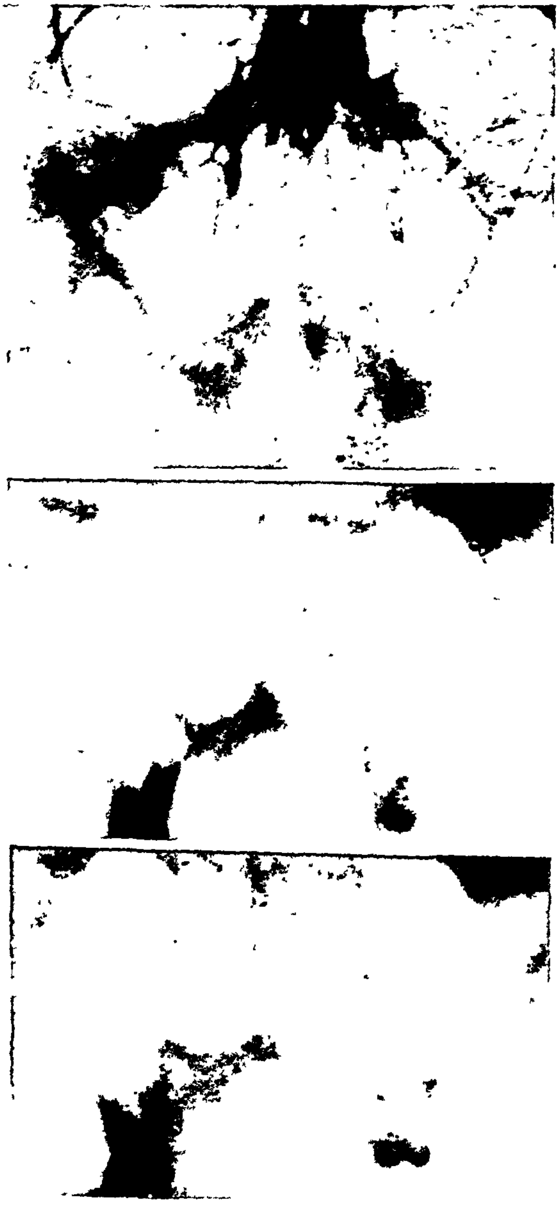

Fig. 14.—Fracture of left superiormaxilla. Above, standard view; center and below, tomographic sections.

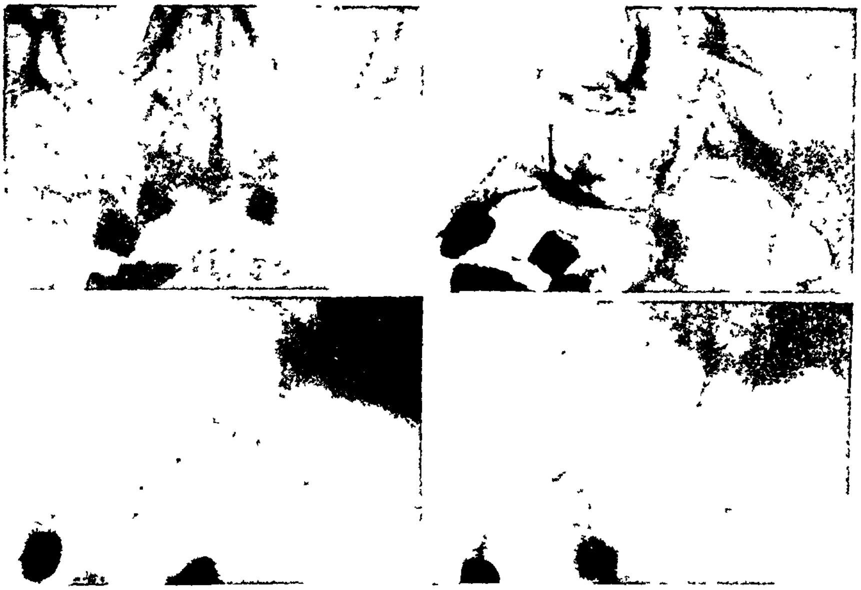

Fig. 15.—Tumor of left superior maxilla. *Above*, standard views; *below*, tomographic sections.

to put into practice for all patients examination methods which are still time-consuming and costly.

It is by no means an exaggeration to say that the technic of taking standard anteroposterior, lateral and oblique films is outmoded if one wants to unearth the diagnosis and, above all, to follow the development of the lesion during and under the influence of different treatments.

The first patient (Fig. 13) is a child with Pott's disease, immobilized for the past two years. This young patient was sent to us for control roentgenograms of the end of the disease. The standard lateral and anteroposterior films show simply a slight haziness of the superior edge of the fifth lumbar and pinching of the fourth and fifth lumbar discs without compression, and with an evidently normal structure. The tomographs of the two lumbar vertebrae (*c*, *d*) bring to light important destructive lesions in the vertebral segments, appearing with extreme clearness in the form of enormous lacunae. Whereas the standard roentgenograms seem to justify progressive reestablishment of the child's normal life, the tomographs indicate that caution and continued immobilization are essential.

The second case (Fig. 14) is that of a young patient with symptoms of chronic rhinopharyngitis. The standard anteroposterior films (*a*) show a shadow of the right maxillary sinus. This shadow has a clearly defined inner edge, and one might consider this to be a cyst or a polyp. The lateral film (*b*) shows nothing of particular interest.

The polytome tomographs of this young patient show several polyps of the right maxillary sinus (*c*, *d*, *e*), of which one is appendant to the superior wall of the maxillary sinus (*f*). One of them, attached to the inferior wall of the sinus (*e*), is inconspicuous on the sections shown.

The third case (Fig. 15) is the result of an everyday accident with trauma at the level of the superficial bones. The standard anteroposterior, lateral and oblique films showed simply a diminution of the air in the left maxillary sinus and a slightly abnormal appearance of the exterior wall of this sinus, which was impossible to determine (*a*). Tomographic sections (*b* and *c*) show clearly that a fracture is present, with depression of the exterior wall of the left maxillary sinus.

The next patient (Fig. 16) had been treated five years earlier for neoplasm of the left part of the vault. Apparently cured for several years, he came back for consultation because he was in pain and because he had had a definite recurrence. Until a few months before his second appearance, he had felt pain on the left only. He has, at present, pain at the level of the right maxillary sinus.

The standard classic anteroposterior film (*a*) shows slight cloudiness of the left maxillary sinus, with a blurred outline of the exterior wall of this sinus. The lateral film (*b*) shows nothing of particular interest; the film taken in the Hirtz position brings to light a haziness of the pterygomaxillary region without being able to indicate the extent of the lesions. A series of tomographic sections enabled us to analyze, plane by plane, the growth of the neoplasm. In this way we noticed destruction of the left palatal vault, of a part of the orbital floor and of the pterygoid process. We have not been able to present, with this article, all the tomographic sections. From these sections we have chosen two that are sagittal and symmeteric in relation to the median plane. On the diseased side (*c*) one sees clearly the destruction of the posterior wall of the maxillary sinus, and the pterygoid process. On the healthy side (*d*), one obtains an image of the pterygoid process that reveals the cause of the pain at the level of the right maxillary sinus. It is a paradental cyst which could, moreover, not have been suspected from the standard anteroposterior film (*a*). In this particular case, only tomographic examination enabled us to study precisely the extent of the bony lesions.

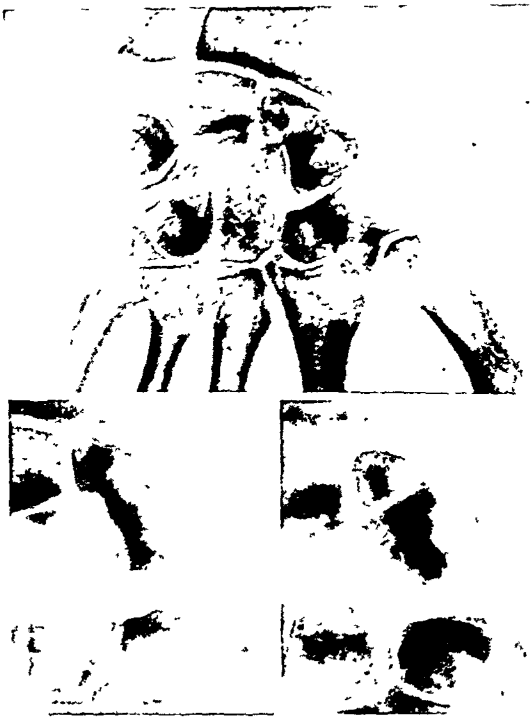

Fig. 16.—Kohler's disease with secondary fracture. *Above*, standard view; *below*, tomographic sections.

Figure 17 was taken in a case of disease of the carpal scaphoid, or Kohler's disease. The patient, who chews tobacco, has used for the past five years an instrument which, it seems, subjects the small wrist bones and, in particular, the scaphoid, to repeated microtrauma. This instrument clearly appears to be the cause of the disease, for we have come across practically identical lesions in the course of a purely scientific examination of a friend of our casualty. We say our casualty, because the patient was sent to us, in effect, because of a trauma that gave rise to a sharp and persistent pain in the region of the wrist. The standard anteroposterior and lateral films of the wrist show a malacic appearance, but it is difficult to say whether or not there is a fracture. One has the impression, however, on the anteroposterior view (*a*) that

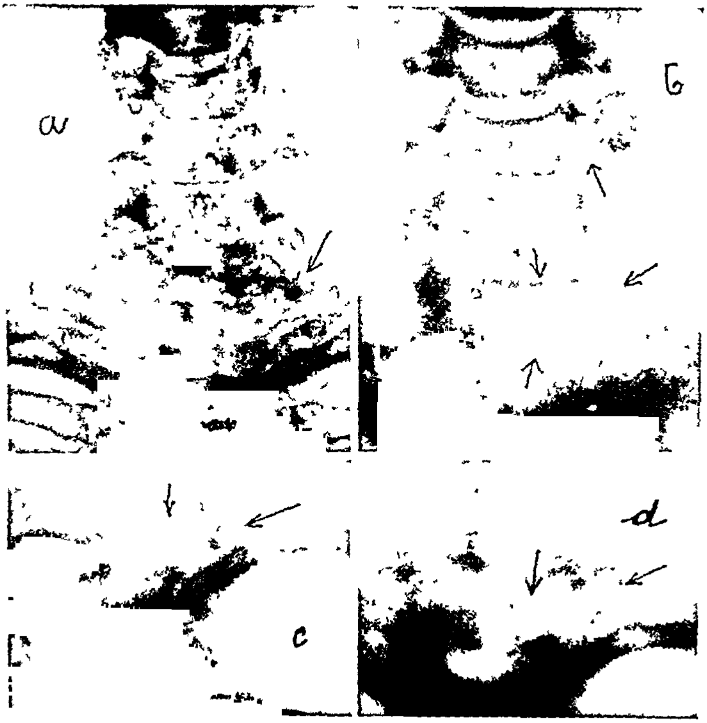

Fig. 17.—Eosinophilic granuloma. Standard view, *a*; tomographic sections, *b*, *c* and *d*.

there is a connecting fluid. The tomographic sections (*b* and *c*) clearly bring to light the scaphoid lacunae and the secondary fracture (*c*).

In the last but one case illustrated (Fig. 18) the patient underwent an operation for a tumor of the spinous process of the axis. Histologic examination has shown that it seemed to be an eosinophilic granuloma. In any case, the patient has remained entirely cured since the operation, and the local condition is perfect. This patient came back, however, for consultation because she had a recurrence of pain in the cervical column, particularly in the cervicodorsal region. A series of examinations revealed two new diseased localizations, one at the level of the seventh cervical vertebra, and the other at the level of the fifth. The standard lateral view showed absolutely nothing abnormal. This is understandable on examination of the tomographs, which bring to light the fact that the lesions are unilateral. On the anteroposterior roentgenogram (*a*) one suspects a localization on the seventh cervical vertebra, but the localization on the fifth cervical passes completely unnoticed. The tomographic sections show not only the damage to the fifth cervical vertebra (*b*) but the extent of the damage to the seventh (*b*, *c*, and *d*), of which the left part seems to be entirely destroyed.

The final case is that of a person stricken with osteomyelitis of the upper end of the tibia. The standard views (*a* and *b*) show the lesion, but only the tomographs (*c* and *d*) enable one to make a complete analysis. It follows from the cases illustrated, as we have already said, that the standard views are outmoded. These standard views, which are increasingly utilized by everyone, enable one,

Fig. 18.—Ostoemyelitis of upper extremity of tibia. Standard views, *a* and *b*; polydirectional tomographs, *c* and *d*.

certainly, in the majority of cases, to make an approximate diagnosis; but when it comes to following the evolution of an osteoarticular lesion, or defining its extent with the accuracy required for a specialist's report, tomographic sections are indispensable. The polydirectional tomographic technic results, as far as the osteoarticular system is concerned, in clearer images than ever before, because of the complete disappearance of all effacement trails. This does not mean that, in certain cases, longitudinal movements will not give satisfactory results. It is precisely because longitudinal movements are sufficient for pulmonary examination that tomographic study has become current practice in making a complete estimation of the lesion and in following its subsequent course. In our opinion the qualified roentgenologist is in duty bound, as a specialist, to favor the osteoarticular system increasingly with a method that has proved itself in phthisiologic practice and is capable of providing, in the roentgen diagnosis of bone diseases, a precision that has heretofore been lacking.

RESUMEN

Se describen las ventajas para el cirujano de el estudio tomográfico polidiseccional en comparación con la técnica linela simple. Se trata de un trabajo basado en estudios hechos en el Servicio de Electrorradiología del Grupo Pelligrin-Tondu de Burdeos. Se describen la técnica y el aparato, un politomo Sans y

Porcher. Una de sus grades ventajas quirúrgicas es que permite tanto las proyecciones oblicuas como las paralelas al plano de sección: El trabajo va ilustrado con diversas tomografías incluyendo estudios clínicos del mal de Pott, rinofaringitis crónica, traumas óseos superficiales, neoplasias de la parte izquierda de la bóveda, enfermedad de Köhler, osteomielitis del extremo superior de la tibia y un tumor de la apófisis espinosa del axis que semeja un granuloma eosinófilo.

ZUSAMMENFASSUNG

Die für den Chirurgen wichtigen Vorteile tomographischer Untersuchungen in mehreren Richtungen im Vergleich mit der gewöhnlichen linearen Technik werden beschrieben. Die Untersuchungen wurden in der Röntgenabteilung der Pelligrin-Tondu-Gruppe in Bordeaux ausgeführt. Das Polytom von Sans und Porcher wird beschrieben und die Technik seiner Anwendung erklärt. Ein wichtiger Vorzug vom chirurgischen Standpunkt wird in der Tatsache gesehen, dass man Schnittaufnahmen sowohl in schräger Richtung als auch parallel zur Schnittebene machen kann. Erläuternde Tomogramme sind beigefügt und umfassen klinische Untersuchungen der Wirbeltuberkulose, der chronischen Rhinopharyngitis, oberflächlicher Knochenverletzungen, einer Neubildung der linken Hälfte des Schädelgewölbes, Köhlerscher Krankheit, der Osteomyelitis des proximalen Endes des Schienbeines und einer Geschwulst des Dornfortsatzes des zweiten Halswirbels, die offenbar ein eosinophiles Granulom darstellte.

SUMARIO

Descreve as vantagens do estudo tomografico polidirectional para o cirurgiao em comparaçao com a tecnica linear baseado no estudo feito no Serviço Electro-Radiologico do Pelligrin-Tondu Group em Bordau. Descreve o aparelho e a tecnica usados. A vantagem maior e que possibilita o estudo das secçoes obliquas e das paralelas aos plano da secçao tomografica. Ilustra com tomogramas e estudos clinicos sobre o mal de Pott, a rinofaringite cronica, os traumas superficiais dos ossos, os neoplasmas, a molestia de Kohler, a oseteomilelite da terço superior da tibia e do tumor sa apofise espinhosa do axis simulando um granuloma eosinofilo.

RÉSUMÉ

Les avantages que présente pour le chirurgien l'étude tomographique polydirectionnelle par rapport à ceux de la technique linéaire sont décrits sur la base d'une étude faite par les auteurs dans le Service électro-radiologique du Groupe Pellegrin-Tondu à Bordeaux. L'appareil utilisé, un polytome Sanz et Porcher, est décrit et sa technique d'application expliquée. Il comporte un grand avantage chirurgical du fait qu'il permet l'étude de sections obliques aussi bien que parallèles au plan de section. Des tomogrammes illustrent les études faites par les auteurs comprenant des cas cliniques sur le mal de Pott, les traumatismes osseux, les polypes du pharynx, les néoplasmes des sinus de la face, la maladie de Köhler-Mouchet, une ostéomyélite de l'extrémité supérieure du tibia et une tumeur de l'apophyse épineuse de l'axis qui était un granulome éosinophile.

Immediate Postoperative Complications of Partial Gastrectomy

J. C. GRANT, M.B.Ch.B., F.R.C.S.E., F.R.F.P.S.*

GLASGOW, SCOTLAND

PARTIAL gastrectomy for peptic ulceration carries a mortality rate of 2 to 3 per cent. This is a high mortality for treatment of a nonmalignant condition. Must this situation be accepted, or are some of the deaths due to postoperative complications that should have been prevented or more efficiently treated? To answer this question the immediate postoperative period was studied in a group of patients who had undergone partial gastrectomy for peptic ulceration.

The immediate postoperative progress of a consecutive series of 240 patients who underwent partial gastrectomy for peptic ulceration has been studied. There were 5 deaths in the series. The causes, management and prevention of the complications encountered are discussed. Leaks from the duodenal stump and the anastomosis and postoperative hemorrhage were the commonest serious complications. The survey shows that some of the complications were due to errors of technic or postoperative care and that the mortality rate could be reduced to 1 per cent.

Material.—A consecutive series of 240 patients on whom partial gastrectomy was performed for peptic ulceration in one surgical unit of the Victoria Infirmary, Glasgow, between March 1950 and October 1954, has been investigated. The sex of the patients and the location of the ulcers are shown in Table 1. A Polya type of gastrectomy was performed on 231 patients, a Billroth I gastrectomy on 8 and a sleeve resection with gastroenterostomy on 1. Subdiaphragmatic vagotomy was performed in addition on 11 patients. Two hundred and twenty-nine operations were elective procedures. There were 2 deaths in the emergency group and 3 in the elective group—an overall mortality rate of 2.1 per cent. The average age of the patients was 45.3 years, with a range of 18 to 75 years.

Results.—The complications that occurred are listed in Table 2.

Hemorrhage.—Five patients had severe bleeding after operation. The definition of this condition is not easy, as many patients have some bleeding from the anastomosis during the first twenty-four hours after the operation. The amount of blood loss by the 5 patients was sufficiently great to consider and, in 3 instances, to justify infusions of whole blood. Bleeding occurred within twenty-four hours of the operation in 3 patients, thirty hours after the operation in 1 patient and on the sixth postoperative day in 1. The abdomen of 1 patient was reopened, as spontaneous arrest of the hemorrhage did not occur.

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TABLE 1.—*Location and Sex Distribution of Ulcers*

Ulcer	*Duodenal*	*Gastric*	*Stomal*	*Duodenal & Gastric*	*Duodenal & Esophageal*	*Total*
Male	151	31	12	8	1	203
Female	15	18	3	1	0	37
Male & Female	166	49	15	9	1	240

TABLE 2.—*Complications*

Complication	*Number*	*Deaths*
Hemorrhage	5	0
Duodenal or anastomotic leaks	11	3
Subphrenic abscess	1	0
Subhepatic abscess	1	0
Intestinal obstruction	1	0
Paralytic ileus	1	0
Wound rupture	3	0
Pancreatitis	1	0
Stomal ulcer	1	1
Bilious vomiting	3	0
Jaundice	3	0
Diarrhea	17	0
Tuberculous bronchopneumonia	3	0
Inhalation pneumonia	1	0
"Postoperative" thoracic infection	30	0
Pulmonary infarct	2	0
Vasovagal attack	1	1
Retention of urine	2	0

collected series of 973 patients who had undergone partial gastrectomy. In his series bleeding occurred between the second and the fourteenth postoperative day and arose from the anastomotic line in 13 patients and from duodenal ulcers left *in situ* in 2. In some cases of the series here reported the gastric vessels on the cut surface of the gastric remnant were individually ligated before the anastomosis was performed, and the impression was formed that those patients had less postoperative bleeding; none of them bled severely. Even with the most careful technics, however, postoperative hemorrhage will occasionally occur. If the complication is recognized early and is adequately treated, the danger to the patient is slight. The diagnosis is obvious if the patient vomits blood or if blood is aspirated from an indwelling Ryle's tube; occasionally blood does not enter the stomach, and a rapid pulse rate and a falling blood pressure are the only signs of hemorrhage. Early recognition of the accident is vitally important. If the hemorrhage is severe, whole blood should be infused promptly, and if bleeding persists a laparotomy should be performed before the patient's condition deteriorates.

Leakage.—A leak from the duodenal stump or from the anastomosis is the commonest fatal complication after partial gastrectomy (Payne, 1936; Glen and Harrison, 1951; Golicher and his co-workers, 1956). Eleven patients in this series showed evidence of such leaks. In 4, a spontaneous discharge of bile-stained fluid from the wound was the first and only sign; in each of those patients this occurred within fourteen days of the operation and the discharge stopped spontaneously within five weeks. The condition was more serious in the remaining 7 patients.

CASE 1.—In the case of J. D., a man aged 37, an antecolic Polya gastrectomy was performed for a duodenal ulcer. Pain and tenderness developed in the right hypochondrium on the seventh postoperative day; this persisted, and the abdomen was reopened on the ninth postoperative day. There was a collection of bile-stained fluid in the right hypochondrium that was thought to have come from the duodenal stump, but the leak had sealed. The abdomen was closed, with drainage of the duodenal stump area. The patient made a satisfactory recovery and was discharged from the hospital on the thirty-fourth postoperative day.

CASE 2.—W. H., a man aged 61, underwent an antecolic Polya gastrectomy for a gastric ulcer. During the closure of the duodenal stump a suture cut through and tore the wall of the duodenum; the tear was repaired with additional sutures. On the third postoperative day pain and tenderness developed in the right hypochondrium. The patient's condition deteriorated, and his abdomen was reopened on the following day. The duodenal stump had leaked; duodenal contents had spilled into the general peritoneal cavity, and there was diffuse peritonitis. The duodenal stump area was drained, and continuous gastric suction and intravenous replacement of fluid and electrolytes were commenced. The peritonitis persisted, and the fistula discharged large quantities of duodenal contents. The patient died on the thirteenth postoperative day.

CASE 3.—In the case of W. G., a man aged 67, an antecolic Polya gastrectomy was performed as an emergency procedure for a bleeding gastric ulcer. After completion of the anastomosis it was noticed that the distal half inch of the gastric remnant was pale. On the fourth postoperative day the pulse rate and temperature were elevated, and the patient was obviously not well, though there were no definite abnormal abdominal signs. His condition deteriorated, and he died on the ninth postoperative day. Autopsy revealed a leak from the posterior wall of the anastomosis and diffuse peritonitis.

CASE 4.—A Billroth I gastrectomy was performed on A. T., a man aged 39, for a duodenal ulcer. Forty-eight hours after the operation severe abdominal pain occurred, associated with boardlike rigidity of the abdominal muscles. The abdomen was reopened two hours later, and a leak from the anterior surface of the anastomosis was observed. The anastomosis was undone; the duodenum was closed, and an antecolic Polya type of anastomosis was performed. The patient made an uneventful recovery and was discharged from the hospital on the forty-second day.

CASE 5.—J. T., a man aged 61, underwent an antecolic Polya gastrectomy for a duodenal ulcer. There was a reversed rotation of the intestine; the third part of the duodenum passed behind and the transverse portion of the colon in front of the superior mesenteric vessels, and the duodenojejunal flexure was adherent to the posterior wall of the right iliac fossa. The duodenojejunal flexure was mobilized as much as possible to allow the first jejunal loop to be brought up to the gastric remnant for the anastomosis, but the superior mesenteric vessels limited this mobilization. Pain and tenderness developed in the right hypochondrium on the third postoperative day; the patient's condition deteriorated, and on the seventh postoperative day the abdomen was reopened. His condition was so poor that local anesthesia was used and an extensive exploration was impossible. There was diffuse peritonitis, and the contents of the abdomen were adherent. A leak from the duodenal stump was considered the most likely lesion, though the duodenal stump was not seen. The duodenal stump area was drained and a jejunostomy performed. At no time was there bile in the discharge from the wound, in the gastric aspirations or from the jejunostomy. The paralytic ileus, which had been present before the second operation, persisted, and the patient was unable to retain jejunostomy feedings. He died on the fourteenth postoperative day. Autopsy showed that there had been a leak from the posterior wall of the anastomosis. In addition, the abnormally placed third part of the duodenum was completely obstructed by the afferent jejunal loop as it ran from its fixed point in the right lower quadrant of the abdomen to the gastrojejunal anastomosis. The proximal portion of the duodenum was enormously distended; it contained about 2 pints of bile. The duodenal stump was intact.

CASE 6.—J. G., a man aged 34, underwent an antecolic Polya gastrectomy for a stomal ulcer after a gastroenterostomy had been undone. Pain and tenderness developed in the right hypochondrium on the seventh postoperative day. A duodenal leak was suspected but by the following day the condition had settled and no special treatment was given. On the twentieth postoperative day the patient had fever, and there was radiologic evidence of a subphrenic abscess. The abscess was drained. The patient eventually recovered and was discharged from the hospital on the seventy-fourth postoperative day.

CASE 7.—An antecolic Polya gastrectomy was performed on J. G., a man aged 44, for a large chronic duodenal ulcer that was penetrating the head of the pancreas. The pyloric antrum was left *in situ* after its mucosa had been removed. (This procedure was adopted only twice in the series.) On the third postoperative day a small amount of bile-stained fluid was discharged from the wound. A small leak from the duodenal stump was diagnosed. The discharge persisted, but as the amount was so small and the patient's general condition so good he was allowed to go home on the twenty-eighth postoperative day. Five weeks later, however, he was readmitted, with epigastric discomfort, fever and loss of appetite. There was a collection of pus in the wound, which subsequently discharged for a few days. A firm swelling could be palpated in the epigastrium, which was thought to be an inflamed pancreas. No biochemical investigations were done to confirm this diagnosis. The patient's appetite gradually returned, and after five weeks he went home in good health.

Several factors, singly or in combination, may be responsible for a leak from the duodenal stump or the anastomosis. Visick (1948) stated bluntly that "a leak from the duodenal stump is due to faulty suturing." Obstruction at the gastrojejunal anastomosis or at some point in the afferent loop is often blamed for the rupture of a duodenal stump (Aird, 1949; Tanner, 1951). Case 5 was the only patient in this series with obvious obstruction of the duodenum, but the duodenal stump suture line did not give way and the stump healed in spite of great distention—and this in a poorly nourished patient who was dying of peritonitis. Minpriss and Birt (1948) described 2 instances of distention of the afferent loop and Henson (1955) discussed 1 instance of the same condition and expressed the opinion that the duodenal stump would have ruptured but for timely intervention. Those patients and Case 5 of this series, far from supporting the thesis that distal obstruction is a cause of rupture of a duodenal stump, demonstrate that a duodenal stump can remain intact in the presence of distal obstruction. If the stump is insecure or has already ruptured, distal obstruction will of course aggravate the condition and will prejudice the spontaneous closure of an established fistula.

Acute pancreatitis occurs occasionally after partial gastrectomy, and it is associated, sometimes, with a duodenal fistula, (Case 7); but it is always difficult to know whether the duodenal leak precedes or follows the pancreatitis. There seems to be no single etiologic factor to account for postoperative pancreatitis, but damage to the pancreatitic head or the duct of Santorini (which in 10 per cent of patients is the main pancreatic duct (Millbourn, 1955, cited by Wapshaw, 1956)) is probably the most common cause. Cases have been reported in which pancreatitis followed gastroenterostomy (Warren, 1951), and in Case 7 of this series the duodenum and the pancreas were not interfered with.

There was suggestive evidence in 3 of the patients in this series (Cases 2, 3 and 4) that the fault was ischemic necrosis. It is difficult to devascularize a stomach, though Rutter (1953) has reported a case in which it happened, and the anastomotic leak in Case 3 was probably due to this cause. The lesion in Case 4 was seen at operation soon after perforation had occurred, and the appearance was consistent with ischemic necrosis. In Case 2 the additional sutures that were necessary to repair the longitudinal tear of the duodenal wall probably impaired the blood supply of that corner of the cut edge of the duodenum. The duodenum has a good intramural blood supply, and usually it can be extensively mobilized without risk of ischemia. When there is a large posterior duodenal ulcer penetrating the head of the pancreas, the posterior wall to the duodenum distal to the ulcer is intimately adherent to the pancreas, and extensive mobilization may damage the pancreatic or bile ducts if the mobilization is carried out on too deep a plane. If it is carried out on too superficial a plane, the blood supply of the duodenum may be compromised. In such circumstances it is much safer to limit the mobilization and rely on an accurately placed single layer of sutures for closure of the duodenal stump. When it is possible to use a two-layer method of closure, care must always be taken lest they cut through and cause damage to the duodenal wall. It is not always the "difficult" duodenal stump closure that leaks. In this series 4 of the 8 patients who had leakage from the duodenal stump had chronic posterior penetrating duodenal ulcers, but 2 had gastric ulcers, 1 a stomal ulcer and 1 a healed duodenal ulcer.

The cause of the leak from the anastomosis in Case 5 was tension on the suture line due to the abnormal site of the duodenojejunal flexure. Mishaps after partial gastrectomy in patients with malrotation of the intestine have been previously reported (Brine and Fraser, 1956; Moretz, 1949). The usual Polya type of anastomosis may be impossible when a malrotation of intestine exists. In such circumstances it is a wise precaution to decide, before performing a partial gastrectomy, whether a gastrojejunal anastomosis will be possible. A Billroth I anastomosis will usually be more satisfactory.

There was no obvious reason why leaks developed in the other 7 patients. The suturing was always done carefully, and faulty suturing is an unlikely explanation. It is much more likely that a portion of the intestine had been made ischemic by faulty mobilization.

The signs and symptoms of a leaking duodenal ulcer have been described by Larcen and Foreman (1951), who said that "pain in the right upper region of the abdomen which is severe, constant and nonradiating associated with tenderness and moderate muscle spasm and accompanied with a progressive rise in the temperature and pulse occurring most frequently three to six days after gastric resection is the syndrome of the leaking duodenal stump." Four of the patients in this series may have had those signs and symptoms, but they escaped notice, and the condition was not diagnosed until the duodenal contents were discharged through the abdominal wound. In 6 patients (Cases 1, 2, 3, 4, 5 and 6) the clinical picture agrees more or less with Larcen and Foreman's description, though the signs and symptoms in Case 4 were more sudden and dramatic and in Case 3 pain was not a feature. Slight tenderness in the right upper quadrant of the abdomen is difficult to assess, because of the proximity to the recent wound; when present it should never be treated lightly, and the abdomen should be examined after all dressings have been removed.

There are three possible consequences of a leak from the anastomosis or the duodenal stump: 1. A localized collection forms, the perforation closes and the collection is reabsorbed. (This probably occurs frequently without being diagnosed.) 2. The duodenal contents track to and are discharged through the abdominal wound. (In this series there were 4 instances of this occurrence.) 3. The contents track elsewhere and form: (a) a localized abscess, e.g., a subphrenic abscess (Case 1), or (b) diffuse peritonitis (Cases 2, 3 and 5). The paralytic ileus invariably associated with diffuse peritonitis prevents the upper intestinal contents from passing downward in the normal way, and they overflow through the fistula into the general peritoneal cavity and aggravate the peritonitis. The patient may die from the toxemia of peritonitis long before the loss of the duodenal contents has become a serious problem (Cases 2 and 3).

The treatment of a leak must aim at preventing the spread of duodenal or gastric contents through the abdominal cavity. This can be done by closing the fistula or diverting the discharge to the surface. As it is impossible to predict which patient will deal adequately with the complication without help, an early laparotomy would seem to be the safest and best course to adopt. Furthermore, soon after the leak has occurred the general condition of the patient is usually good, and he is better able to withstand the effects of an operation than he will be two or three days later. Unfortunately the signs and symptoms are seldom as dramatic as they were in Case 4. The mildest signs should be sufficient indication for a laparotomy, which should be performed under a general anesthetic to allow thorough exploration of the abdominal cavity, should this be necessary. In Case 5 the duodenal stump area was drained four days after the first signs of a leak, using local anesthesia. At autopsy it was observed that the leak was from the posterior wall of the anastomosis. If this patient's abdomen had been explored within twenty-four hours of the first sign of a leak, the final outcome might have been different. The practice adopted by some surgeons (Hosford, 1949; Schmitz and his associates, 1954) of draining the duodenal stump area after all gastrectomies or after those in which a leak is considered likely, allows the contents to come to the surface if a leak occurs, prevents contamination of other parts and brings the accident to immediate notice. If there is any doubt about the duodenal closure, this seems a worth-while safety measure. Hosford (1949) reported a personal series of 200 partial gastrectomies for peptic ulceration with only 1 death, and he drained the duodenal stump area in all doubtful cases. The drain may be brought through the upper part of the epigastric wound or through an independent stab wound in the right hypochondrium.

Postoperative Pulmonary Complications.—In 1936 Payne noted that pulmonary infections were the second commonest cause of death after partial gastrectomy. Most postoperative pulmonary complications encountered today are not regarded as serious conditions. This change in outlook is attributed to the change in anesthesia, the use of antibiotics and the early mobilization of the patient (Kursweg, 1954). In the series here presented there were 34 patients in whom postoperative respiratory infections or atelectasis developed. These patients were instructed in breathing exercises and were given a course of intramusclar penicillin. Thirty improved rapidly and gave no cause for anxiety. One patient, who had vomited while coming out of anesthesia and had inhaled gastric material, developed inhalation pneumonia of all three lobes of the right lung; five weeks elapsed before the condition resolved. Three other patients failed to respond to treatment; radiologic and bacteriologic investigations showed that they had acute tuberculous bronchopneumonia. In 7 other patients pulmonary tuberculosis subsequently developed. This incidence of 10 out of 240 patients (4.2 per cent) is similar to that observed in another Glasgow series, in which 16 out of 418 patients (3.8 per cent) had pulmonary tuberculosis following partial gastrectomy for peptic ulceration (Anderson and others, 1955). There are now many reports of pulmonary tuberculosis developing after partial gastrectomy. The high incidence of this complication in the present series probably reflects the high incidence of pulmonary tuberculosis in the Glasgow area. The literature on the subject deals with the development of pulmonary tuberculosis months or years after a partial gastrectomy has been performed. Warthen (1953), however, had 2 patients in whom acute pneumonic tuberculous lesions developed within three months of the operation. The 3 patients in the present series in whom acute tuberculous bronchopneumonia developed in the immediate postoperative period had a barium meal examination within six weeks of their operations: this included screening of the chest, and tuberculosis was not then detected. It is well known that partial gastrectomy is an unsuitable operation for a patient with pulmonary tuberculosis. Furthermore, the experience in this series shows that reliance cannot be placed on screening of the chest alone and even a normal radiograph does not necessarily mean that no pulmonary tuberculosis is present (Thorn and others, 1956). When presented with the problem of treating a patient who has pulmonary tuberculosis and peptic ulceration, the surgeon should perform partial gastrectomy only as a last resort. For duodenal ulceration vagotomy and gastroenterostomy are preferable, but there are patients who will require gastrectomy; for example, a patient with a chronic gastric ulcer which has failed to respond to medical treatment. Before surgical treatment is carried out, a preoperative period should be spent in a sanatorium with the administration, if necessary, of the antituberculous antibiotics. No patient with pulmonary tuberculosis would ever be subjected to pneumonectomy, lobectomy or thoracoplasty without prolonged preoperative preparation. The possibility of a flare-up of pulmonary tuberculosis exists when operations on other organs are performed, as was demonstrated recently in this surgical unit. An elderly man was admitted with a strangulated femoral hernia; he was operated upon, local anesthesia being used, and during the immediate postoperative period acute tuberculous bronchopneumonia developed from which he died three months later. This man had suffered from "chronic bronchitis" for years. He had, no doubt, chronic pulmonary tuberculosis, and the strangulation of the femoral hernia and the subsequent operation to deal with it were sufficient to upset the balance between the tubercle bacilli and the host.

In each of 2 patients in the series a pulmonary infarct developed. Neither infarct was large, and the patients both made uneventful recoveries.

Vasovagal Attack.—One patient, a man aged 39, was treated by an emergency Polya gastrectomy for severe bleeding from a duodenal ulcer. His condition throughout the operation was good, and on its completion he was given 1 mg. of prostigmine, preceded by 1/100 gr. of atropine, to counteract the effect of the relaxant drugs that had been used. Thirty minutes later his heart stopped. The abdomen was reopened, and cardiac massage through the diaphragm was initiated. The heartbeat returned for a short time, but the patient ultimately died. Postmortem examination revealed no abnormality. Cardiac arrest after the administration of atropine and prostigmine has been previously reported (Macintosh, 1949; Lawson, 1956), but the mechanism is not clear. Macintosh suggested that when the two drugs are given together the vagus-stimulating effect of prostigmine may occur before the vagus-blocking effect of atropine takes place, and Lawson suggested that, initially, atropine stimulates the vagus. Pooler (1957) has suggested that the administration of atropine to a patient with a carbon dioxide buildup may cause vagal stimulation. The cardiac arrest occurred in this patient thirty minutes after the administration of atropine and prostigmine. It seems likely that vagal stimulation was the cause of the sudden cardiac arrest, but the stimulant is not known and there is no incriminating evidence against either atropine or prostigmine.

Retention of Urine.—In 2 patients there was postoperative retention of urine, which was due to prostatic enlargement. In both, catheterization was required for a few days, and a prostatic resection was performed on 1 a year later. Retention of urine can be a troublesome complication, but it may be eliminated to a certain extent by diagnosing prostatic enlargement and, if necessary, performing prostatectomy, before embarking on partial gastrectomy.

Postoperative Vomiting.—Four patients suffered from this complication. Two of them vomited small quantities of bile at irregular intervals during the immediate postoperative period, but the vomiting ceased within fourteen days. A female patient who had undergone a Billroth I gastrectomy combined with subdiaphragmatic vagotomy performed for a duodenal ulcer vomited copious quantities of gastric contents for three months. This particular operation is notorious for producing gastric retention; it is doubtful that it is ever justified. The fourth patient, a man aged 50, in whom a Polya gastrectomy was performed for a duodenal ulcer developed paralytic ileus which persisted for nine days. He was treated by continuous gastric suction and intravenous replacement of fluids and electrolytes. This patient is of interest in that he was the only one in the series with this complication, which Ebrill and Naptilin (1953) encountered in 10 per cent of their patients on whom gastrectomy was performed for peptic ulceration. These authors considered the condition due to a sodium-potassium imbalance. They suggested that it is likely to occur if: (1) there is a potassium deficiency of 125 to 150 milliequivalents, (2) the depletion occurs within forty-eight hours and (3) there is a sodium-potassium imbalance of at least 300 milliequivalents. Loss of potassium from the urine is increased for the first few days after the operation (McPhee, 1953) and there is additional loss of potassium from gastric aspiration. If during this period the patient is given considerable quantities of intravenous saline solution, the three conditions aforementioned will often be fulfilled. In this series the standard postoperative regime consisted of a slow intravenous infusion of 5 per cent dextrose in water for twelve to twenty-four hours (a total volume of 1 to 1.5 liters would be given). Thereafter the patient was allowed sips of water, milk was given on the second postoperative day and a light diet was begun on the third postoperative day. Such a regime is unlikely to produce a sodium-potassium imbalance, and therefore the small incidence of paralytic ileus in this series supports the suggestions of Ebrill and Naptilin. It is difficult to believe, however, that sodium-potassium imbalance is the only factor responsible for this type of postoperative ileus. Peritonitis, or even handling of the bowel, can cause a similar condition. Furthermore, in the past, before the importance of potassium deficiency was appreciated, patients have recovered from paralytic ileus after many days of gastric aspiration and intravenous fluid and electrolytic replacement that did not include any potassium; those patients must have had gross sodium-potassium imbalance. Perhaps, in some patients, the intestine is susceptible to electrolytic imbalance. Provided there is no deficiency of fluid and electrolytes when the patient is operated upon, there is no need for enthusiastic intravenous therapy. Indeed, Wilkinson (1956) has shown that patients make an uneventful recovery from partial gastrectomy when no fluids at all are given in the first forty-eight hours.

Diarrhea.—Seventeen patients had postoperative diarrhea, but none was seriously ill. The feces were not examined for organisms. After gastrectomy the incidence of the severe type of enterocolitis is low. Dawson-Edwards and Morrisey (1955), in a series of 1,700 patients on whom a partial gastrectomy was performed for peptic ulceration, encountered the severe type of enterocolitis in only 8, an incidence of 0.5 per cent. It is not surprising, therefore, that in this series of 240 patients the severe type was not encountered. Each of the 17 patients had three or four loose bowel movements in the first postoperative week. It is impossible to say whether this is a mild form of the enterocolitis that is so often fatal or an entirely different condition. Howie and his co-workers (1953) demonstrated Clostridium Welchii and

Welchii alpha toxin in gastric aspirations from patients who had undergone partial gastrectomy. According to Todd and Hope (1955), postgastrectomy diarrhea is caused by an antibiotic-resistant Staphylococcus aureus, the sole surviving organism in the bowel after the patient has had a course of treatment with one of the broad spectrum antibiotics or a combination of penicillin and streptomycin. Cook and his co-workers (1957) cultured Staph. aureus from the feces of 21 out of 30 patients with severe diarrhea that had followed antibiotic therapy. The evidence against antibiotic-resistant staphylococci is sufficiently strong to make one cautious about the indiscriminate use of antibiotics.

Stomal Ulcer.—Report of a Case: A diabetic woman aged 50 vomited persistently three months after a gastroenterostomy had been performed for a duodenal ulcer from which she had suffered for twenty years. Laparotomy revealed a stomal ulcer with extensive fibrosis extending from the transverse mesocolon round the transverse colon and onto the anterior abdominal wall. The anastomosis was undone and a posterior Polya gastrectomy performed. Within a week vomiting had recurred, and a further laparotomy revealed a stomal ulcer with extensive fibrosis, which was partially obstructing the stoma and the transverse colon. The gastric remnant was opened through its anterior wall to allow digital examination of the stoma and an enteroenteroanastomosis between the afferent and efferent loops was performed. The patient died seven days later from peritonitis caused by a leak from the gastrotomy wound.

Stomal ulceration with such extensive fibrosis and so soon after partial gastrectomy is uncommon. The untimely death of this patient solved the problem of treatment, for the enteroenteroanastomosis would have relieved the obstruction only temporarily if the fibrous tissue reaction had persisted and extended.

Subhepatic Abscess.—Report of a Case: A woman aged 49 years underwent a Polya gastrectomy for a large gastric ulcer that had penetrated the pancreas and the inferior surface of the liver. The stomach was removed from the ulcer base, which was not disturbed. On the eighth postoperative day there was a purulent discharge from the wound, which settled within a week. Subsequently a mass developed in the upper part of the abdomen, and on the thirtieth postoperative day the abdomen was reopened and a large subhepatic abscess was drained. Thereafter the patient's progress was uneventful, and she was allowed to go home on the forty-ninth postoperative day. The assumption, and it seems a reasonable one, is that the abscess was caused by organisms in the ulcer base. Two procedures are worth considering when an ulcer base is exposed: (1) cauterization of the ulcer bed and (2) drainage of the abdomen.

Intestinal Obstruction.—Report of a Case: A Polya gastrectomy was performed on a youth aged 19 for a duodenal ulcer. On the second postoperative day the patient complained of abdominal pain, which was associated with vomiting. The vomiting persisted, and at the time the condition was thought to be paralytic ileus; in retrospect the diagnosis of obstruction of the small bowel was obvious. On the eleventh postoperative day laparotomy was performed; the small bowel was obstructed at about its midpoint by an adhesion between the greater omentum and the small bowel; the bowel had rotated round this fixed point, and at the point where the adhesion crossed the bowel the lumen was completely obstructed.

Such an accident as this occasionally occurs after a laparotomy, and the diagnosis is not usually difficult; but with this patient a diagnosis of paralytic ileus wa-made, chiefly because of absent bowel sounds. The diagnosis became more difficult after the introduction of continuous gastric suction and intravenous fluid replacement, as the pain subsided and the bowel remained silent.

Miscellaneous Complications.—There were 4 patients whose wounds ruptured without any obvious reason. The wounds were resutured, and all the patients recovered uneventfully.

In 3 patients jaundice developed in the postoperative period. In 1, the jaundice occurred three months after the operation, and infective hepatitis was diagnosed on clinical and biochemical evidence. It seems likely that the patient was infected by the blood he was given during the operation, or from an injection with a contaminated needle while he was in hospital. In the other 2 patients jaundice developed during the first postoperative week; in both, a raised serum bilirubin level (4.7 and 5.3 mg. per hundred cubic centimeters) was the only biochemical abnormality. The jaundice was attributed to hemolysis of transfused blood.

Mild infection of wounds was not uncommon, but the occurrence was not always recorded in the case notes, and consequently the incidence is not known.

CONCLUSIONS

In a series that includes emergency gastrectomies a mortality rate of 2.1 per cent might be considered satisfactory, but detailed analysis of the 5 deaths shows that 3 of them (Cases 2, 3, and 5 of the duodenal and anastomotic leak group) might have been prevented with better technic at operation or improved postoperative management. It is difficult to see how death could have been prevented in the patient who had the vasovagal attack or in the patient with the stomal ulcer. It is unlikely that in any large series the mortality rate will ever be much less than 1 per cent.

This investigation has confirmed certain points that are worth restating:

1. The lung fields of each patient should be examined roentgenographically to eliminate pulmonary tuberculosis. If a lesion is present, even though it is considered inactive, partial gastrectomy, if it must be done at all, should be delayed to allow time for adequate preoperative antituberculosis treatment.

2. If there is any evidence of prostatic enlargement, the condition should be assessed and a decision made on the line of treatment to be adopted, *before* acute retention of urine develops as a complication of partial gastrectomy.

3. At operation the anastomosis and the duodenal stump must be adequately sutured, but the blood supply must not be compromised; if there is any doubt about the security of the suture line, the area should be drained.

4. During the immediate postoperative period the patient must be observed by someone who has sufficient knowledge and experience to recognize the early signs of such complications as hemorrhage and leaking suture lines, so that treatment can be initiated before irreversible damage has occurred.

5. Antibiotic-resistant staphylococci are unwelcome residents in surgical wards and, as the danger that postgastrectomy staphylococcic enterocolitis may develop seems to be greater when the broad spectrum antibiotics are used, their use should be restricted.

6. Intravenous fluid after operation is usually unnecessary and can be harmful; it should be given only when specially indicated.

Acknowledgments: The patients in this study were treated in Mr. Robert Mailer's unit, Victoria Infirmary, Glasgow, and I am greatly indebted to Mr. Mailer for his help in the preparation of this paper.

ZUSAMMENFASSUNG

Es liegt eine Untersuchung des unmittelbaren postoperativen Krankheitsverlaufes bei 240 aufeinander folgenden Krankheitsfällen vor, in dene wegen peptischer Geschwüre eine partielle Magenresektion ausgeführt worden war. In dieser Krankenserie kamen fünf Todesfälle vor. Die Ursachen, die Behandlung und die Vorbeugung der auftretenden Komplikationen werden erörtert. Undichtigkeiten des Duodenalstumpfes und der Anastomose sowie postoperative Blutungen gehörten zu den häufigsten ernsten Komplikationen. Die Nachprüfung der Fälle zeigt, dass manche Komplikationen auf Fehlern in der Technik oder in der postoperativen Versorgung beruhten, und dass die Sterbichkeitsquote sich auf ein Prozent herabsetzen liesse.

RÉSUMÉ

Les progrès postopératoires immédiats d'une série de 240 malades ayant subi une gastrectomie partielle pour ulcère peptique sont étudiés. La statistique comprend 5 décèe. Les causes, le traitement et la prévention des complications rencontrées sont analysés. Des suintements du moignon duodénal et de l'anastomose, ainsi que l'hémorragie postopératoire sont à l'origine des complications graves les plus fréquentes. Cette étude montre que certaines complications sont à mettre sur le compte d'erreurs de technique ou du traitement postopératoire, et que le taux de mortalité pourrait être réduit à 1%.

RESUMEN

Se han estudiado en este trabajo los progresos conseguidos, en el postoperatorio inmediato de 240 enfermos de úlcera péptica operados de gastrectomía parcial. Cinco de los operados murieron a consecuencia de la operación. Se estudian las causes, trataminto y prevención de las complicaciones. Las complicaciones mas frecuentes fueron le dehiscencia del muñón duodenal, la de la anastomosis y la hemorragia. La observación atenta demuestra que parte de estas complicaciones se deben a errores de técnica o de los cuidados postoperatorios y por ello creen los autores que la cifra de mortalidad podrá rebajarse hasta un 1%.

SUMARIO

Os progressos posoperatorios imediatos numa serie de 240 doentes submetidos a gastrectomia parcial por ulcera peptica constutuem os motivos deste trabalho. Nesta serie houve 5 mortes. Discutem as causas e prevenção das complicações encontradas. As complicações comuns mais serias foram a deiscencia do coto duodenal, e as hemorragias na anastomose e no posoperatorio. Ficou demonstrado que algumas dessas complicações foram devidas a erros de tecnica ou de assistencia no posoperatorio e que a taxa de mortalidade poderia ter sido reduzida a 1 por cento.

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◆

Fat has a scanty blood supply, and therefore a poor resistance to trauma and infection. It must be treated gently. cut cleanly. not torn or undermined. The fatty layers of a wound should be drained under conditions of contamination in which more vascular tissues could be trusted. Fat is on the whole the enemy of surgical handicraft. It tends to alternate with connective tissue in the interspaces of the body, such as the subcutaneous layers and the mesenteries. Where there is little fat there is much fibrous tissue and stitches hold well; where there is much fat blood vessels have hardly any adventitious sheath. and tear easily or slip out of ligatures. and stitches tend to cut out.

—*Ogilvie*

Genitourinary Surgery

Operative Treatment of Urethral Stricture

LUIS A. SURRACO, M.D.

MONTEVIDEO, URUGUAY

The author describes the nature, pathogenesis, pathologic picture and treatment of urethral stricture, listing the indications for surgical intervention and discussing the operative technic employed.

He points out that the pathologic process is not confined to the pericanalicular areas of the corpus spongiosum but may extend to the paraurethral area, silently invading the bulbus cavernosus of the aponeurotic muscle and the superficial tissue cells of the perineum.

Preoperative and postoperative urethrograms are presented to demonstrate the results obtained. The author has demonstrated the advantages of his technic on patients formerly too difficult to catheterize and patients who had undergone hypogastric cystectomy.

THE treatment of urethral stricture is governed by the etiopathogenic process and the canalicular periurethral and para-urethral anatomotopographic process. The etiopathogenic process guides one to the site of *surface extension* in the alteration of the canalicular diameter, either of the cicatricial epitheliosclerous or of the inflammatory-sclerous type; but, besides what the anatomopathologic alteration of the stricture means in itself as regards its *location* in the urethral wall, to the prognosis and to present and future treatment, the extension of the pathologic process beyond the apparently limited area of the stricture should be considered essential. This obliges one to bear in mind the roles of the periurethral and the para-urethral areas in the integral process.

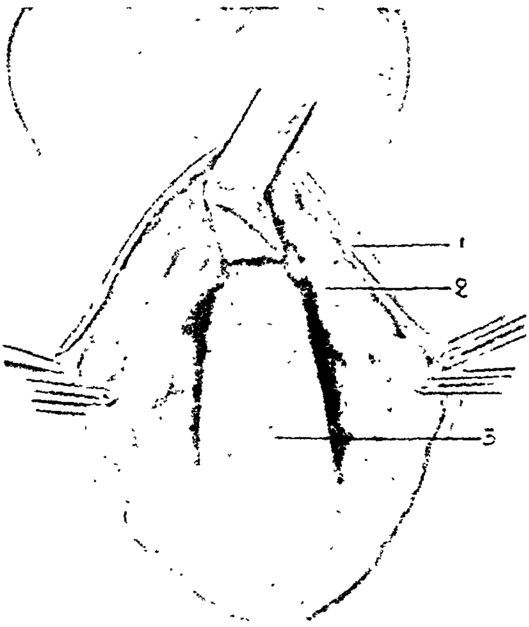


Fig. 1 (see text).

Submitted for publication July 7, 1959.

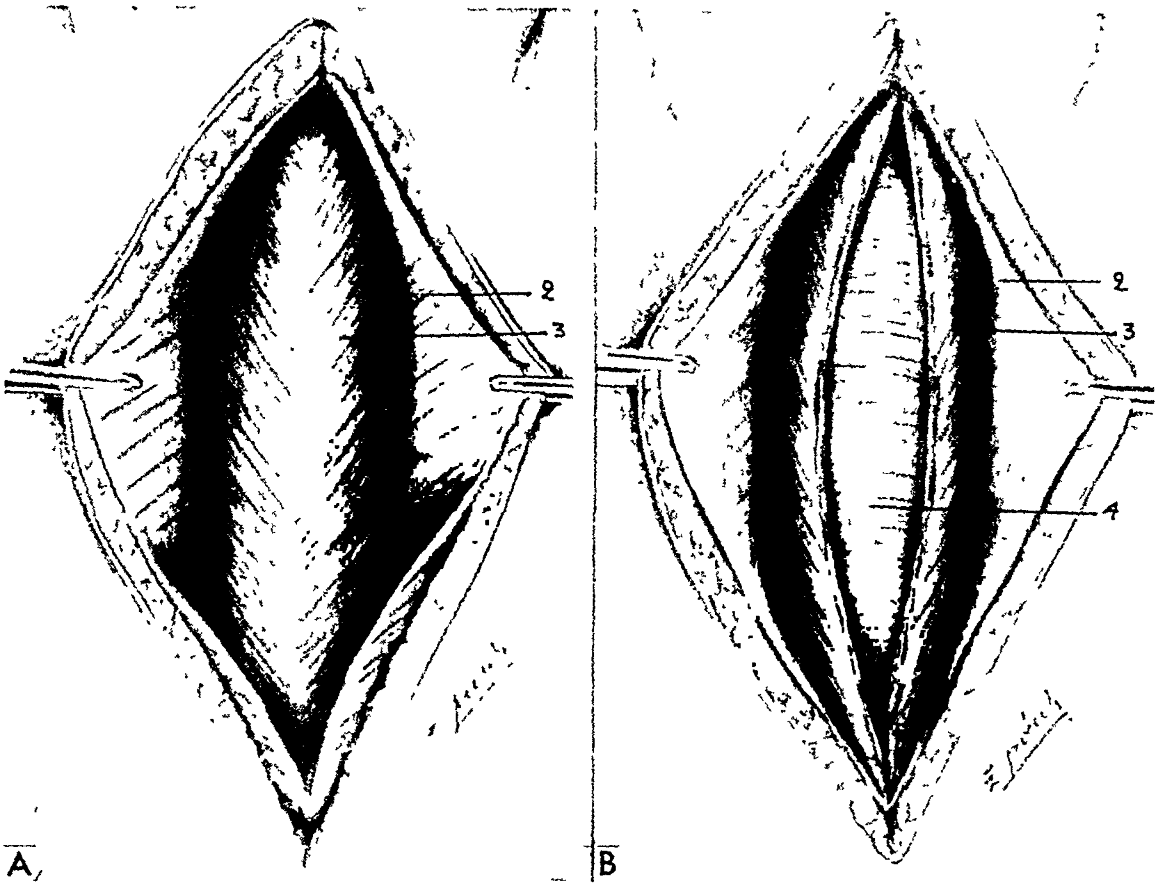


Fig. 2 (see text).

Classic authors have been absolute in describing extension of the urethral process to the area of the corpus spongiosum whereon the body of the urethral gland rests. This was the basis of the work of Finsen-Wassermann and of the Necker school brought up to date by Motz. The urethral alteration process, however, is not circumscribed in general to the pericanalicular area of the corpus spongiosum; it easily extends to the para-urethral areas, silently invading the cavernous bulb of the aponeurotic muscle and the superficial cell tissue of the perineum.

Ureterographic study of the stricture will show the participation of the spongiose and perispongiose area, invading by propagation (lymphatic or venous) sections of the perineum, and it will be understood that these conditions, whether silent or more or less noisily revived in the long run through lack of treatment or in spite of it, will form areas of sclerous reaction capable of maintaining and even intensifying the canalicular constriction. Certain topographic areas are to be considered nuclei of such an inflammatory-sclerous reaction: (a) the corpus spongiosum which —partly—is taken in any case of stricture for a peridenitic or phlebitic process showing areas of sclerosis; (b) the aponeurosis investing the corpus spongiosum, a lamina that compresses that vascular body and, responding to the initial infectious process, firmly adheres to that body aiding to prevent its expansion; (c) the bulbocavernous muscle with the superficial perineal aponeurosis investing it, by infiltration, also becomes an agent in constricting the corpus spongiosum, and (d) the area of superficial adipose connective tissue (Colles' space) which readily thickens in the presence of a urethral infectious extension process. Thus, it will be understood that this aggregation of inflammatory alterations, generally silent in appearance and development, should be considered an agent of sclerous constriction in the face of the apparently isolated canalicular process.

As a matter of fact, when a case of canalicular stricture is examined, it will be easy to find several situations: either the alteration is localized in the urethral ceiling as hard infiltrations, or alterations of the corpus spongiosum as hard nuclei-diaphragm-section types are present, particularly near the meatus and in the perineal-bulbar area; or again the process will extend to the whole of the cylinder in the spongiose and aponeurotic muscular areas and that of the superficial cell tissue and will have formed a sort of armor investing the urethral canal, so that the organ can hardly be displaced, either sidewise or backward.

The original cause is extensions by lymphatic or venous infiltration and not by immediate progression, silently following the urethral process. It is not difficult, therefore, to find the various apparently isolated localizations; for instance, superficial infiltration of the adipose tissue, together with stricture of the canal, with apparent indemnity of the intermediate areolar and muscular areas.

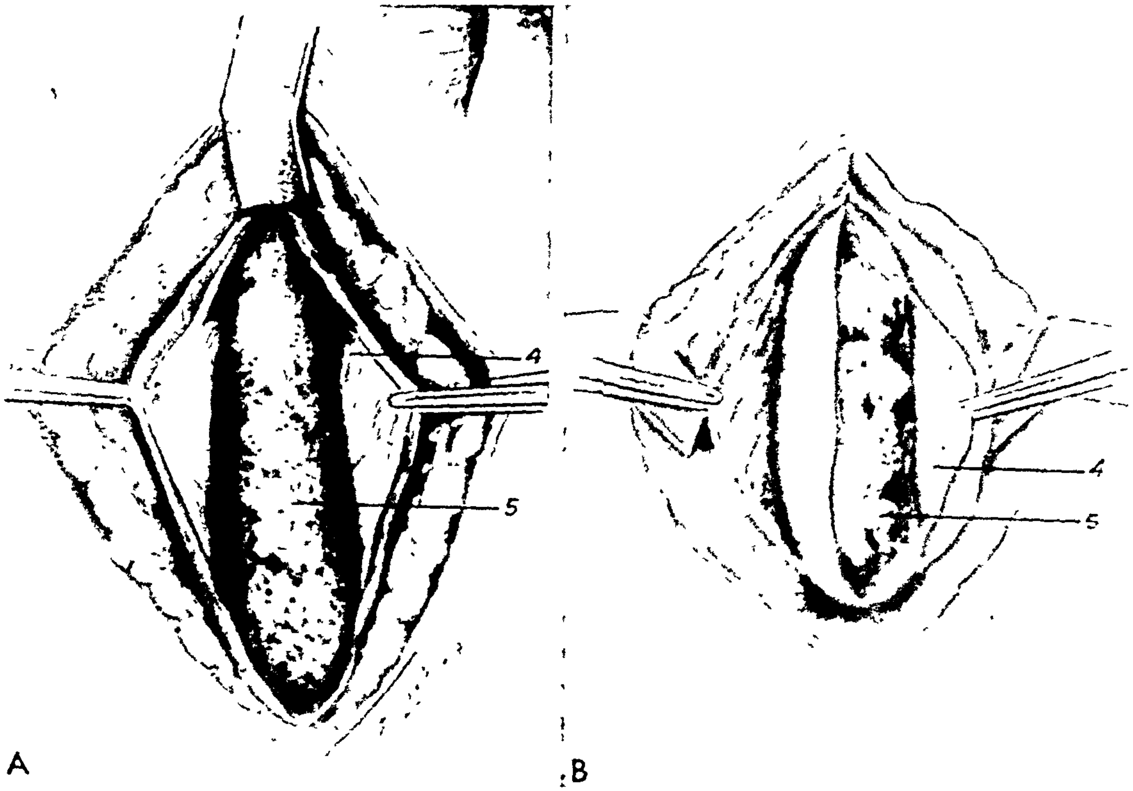
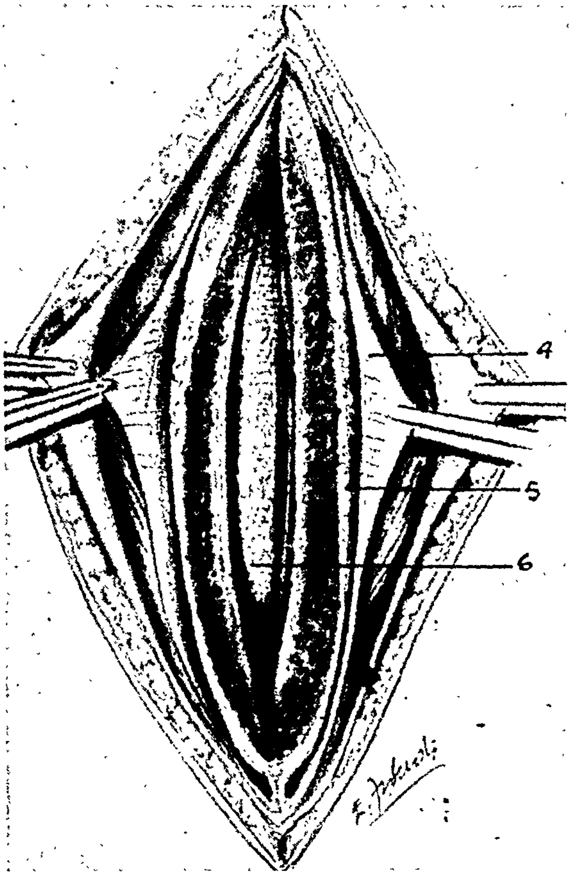


Fig. 3 (see text).



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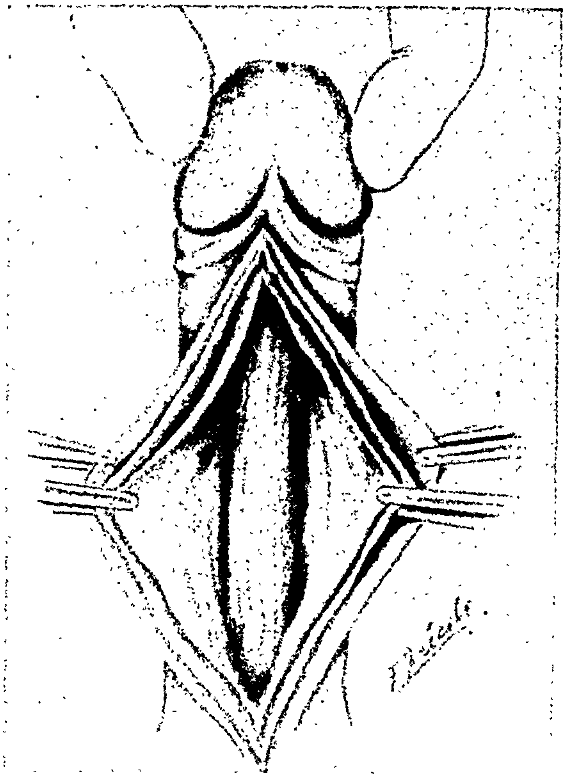

Fig. 5 (see text).

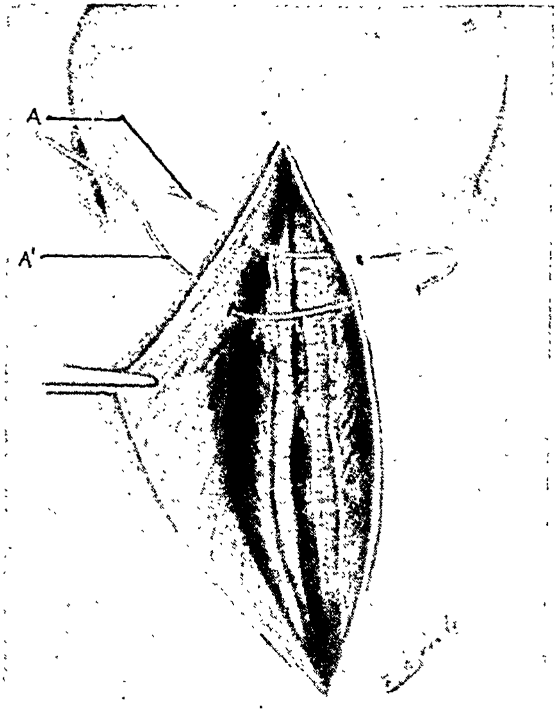

Fig. 6 (see text).

The aforementioned ureterographic exploration illustrates these distance invasions, showing, in addition to the apparently silent urethral process without any degree of dysuria, irregularities of urethral filling, with alterations of the spongiose-muscular sheath and the superficial extensions.

These surprising results of the exploration show that in the presence of canalicular stricture one should face the problem of the distance lymphatic-venous repercussion, which may be the cause of complications. The result of such chronic invasion is a slow but progressive formation, through sclerofibrous reaction, of a constriction process which, involving one after another of the periurethral and

Fig. 7.—Preoperative (left) and postoperative (right) urethrograms, indicating results (see text).

Fig. 8.—Preoperative (left) and postoperative (right) urethrograms, indicating results (see text).

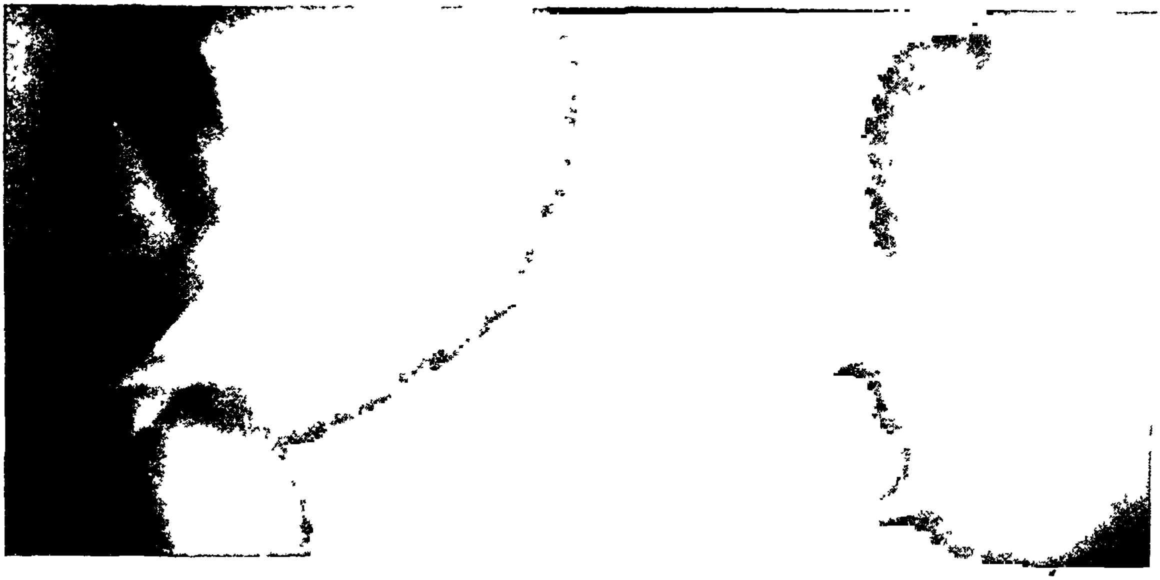

Fig. 9.—Preoperative (left) and postoperative (right) urethrograms, indicating results (see text).

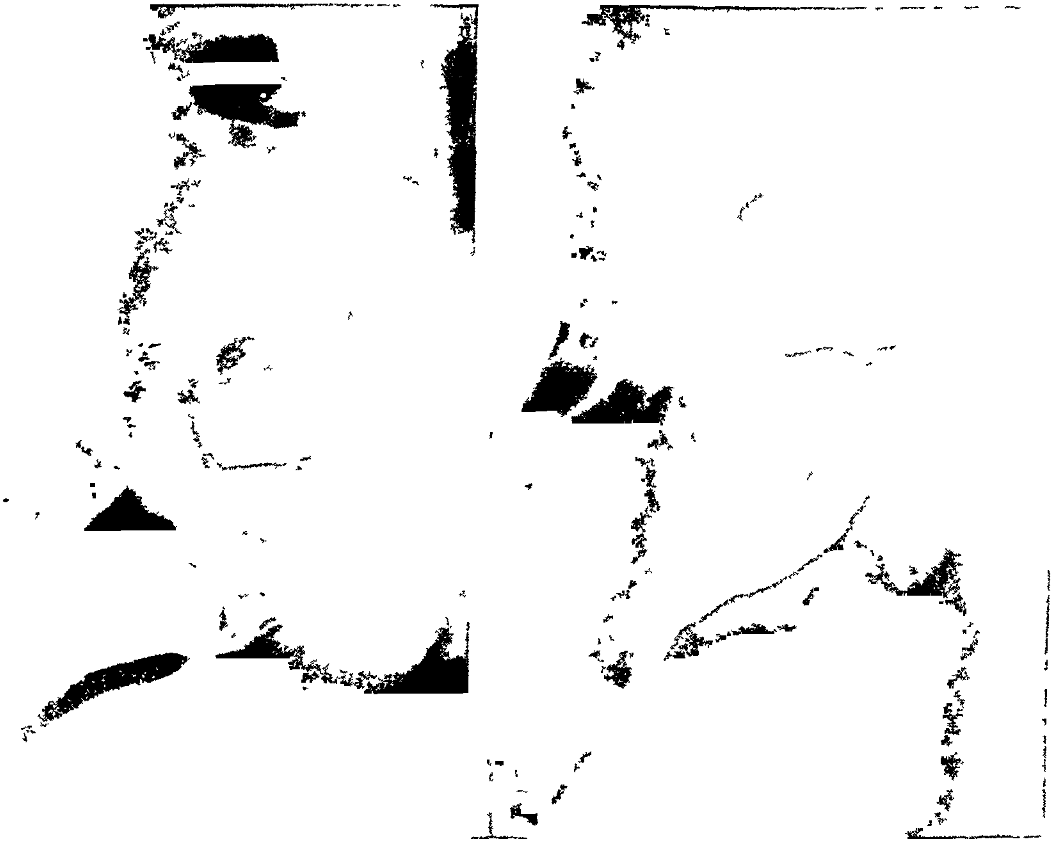

Fig. 10.—Preoperative (left) and postoperative (right) urethrograms, indicating results (see text).

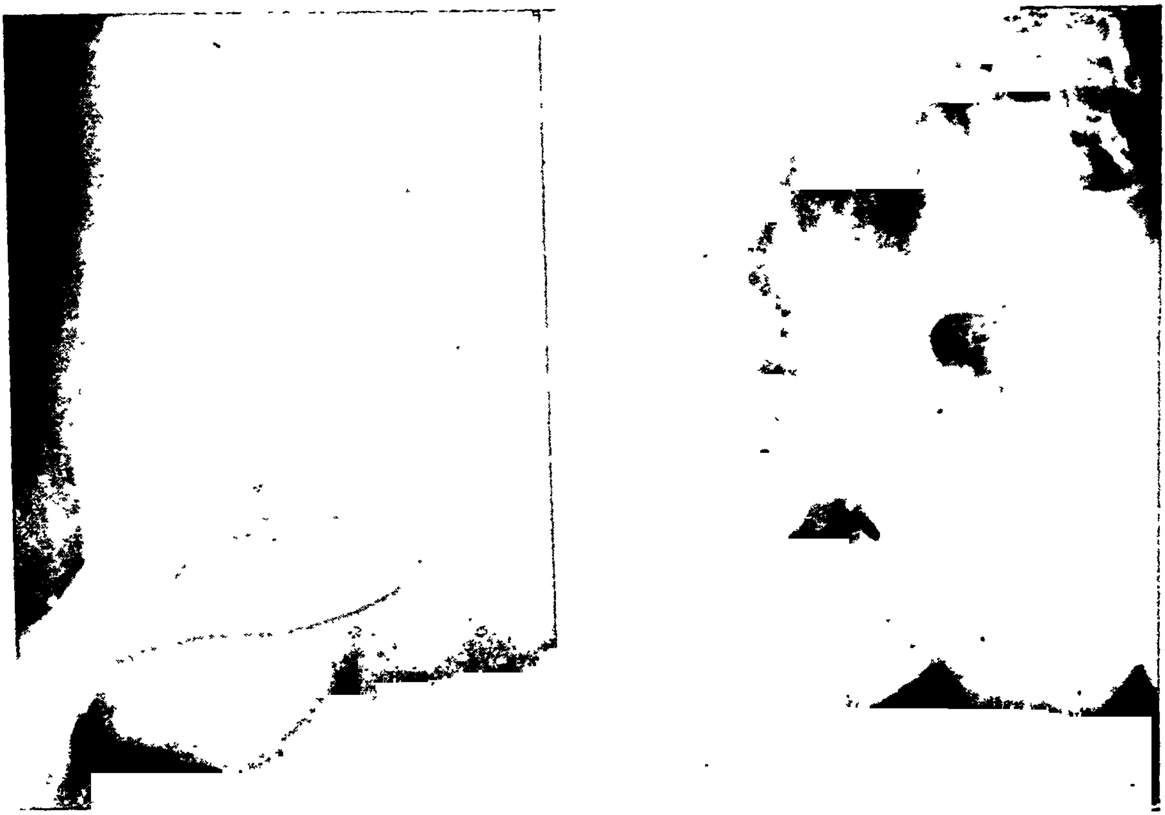

Fig. 11.—Preoperative (left) and postoperative (right) urethrograms, indicating results (see text).

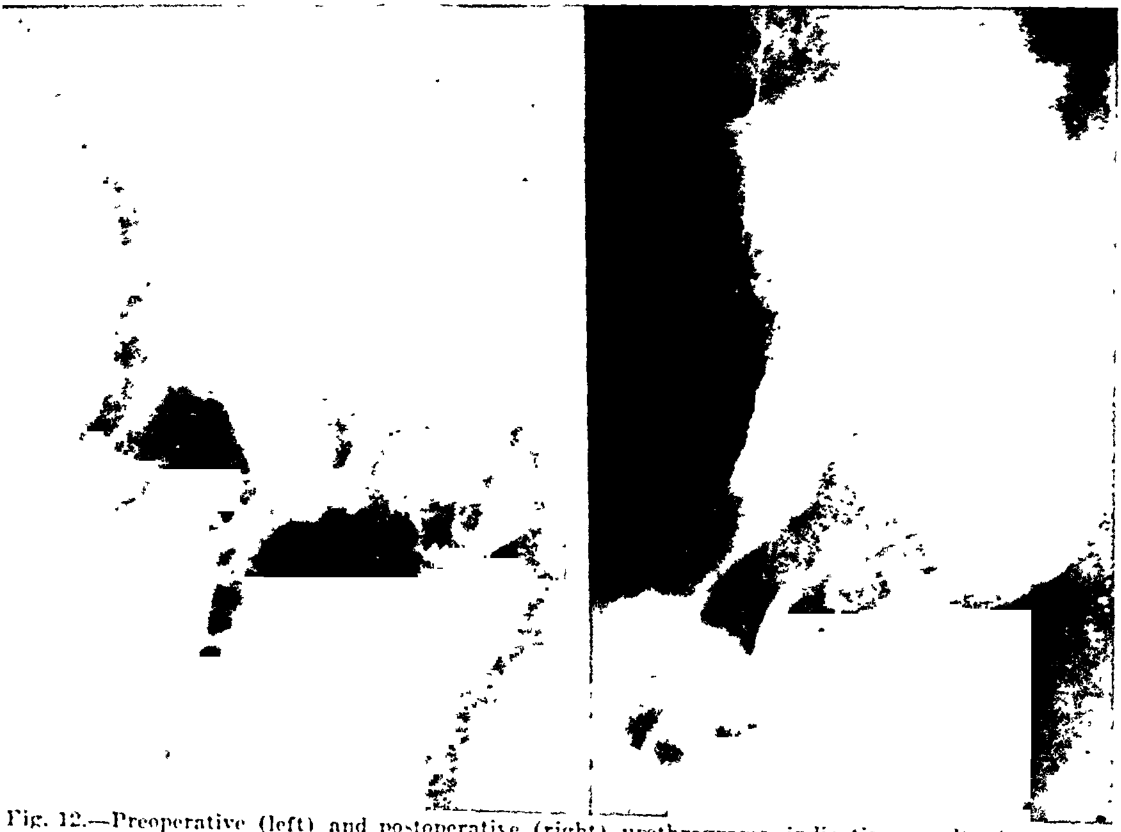

Fig. 12.—Preoperative (left) and postoperative (right) urethrograms, indicating results (see text).

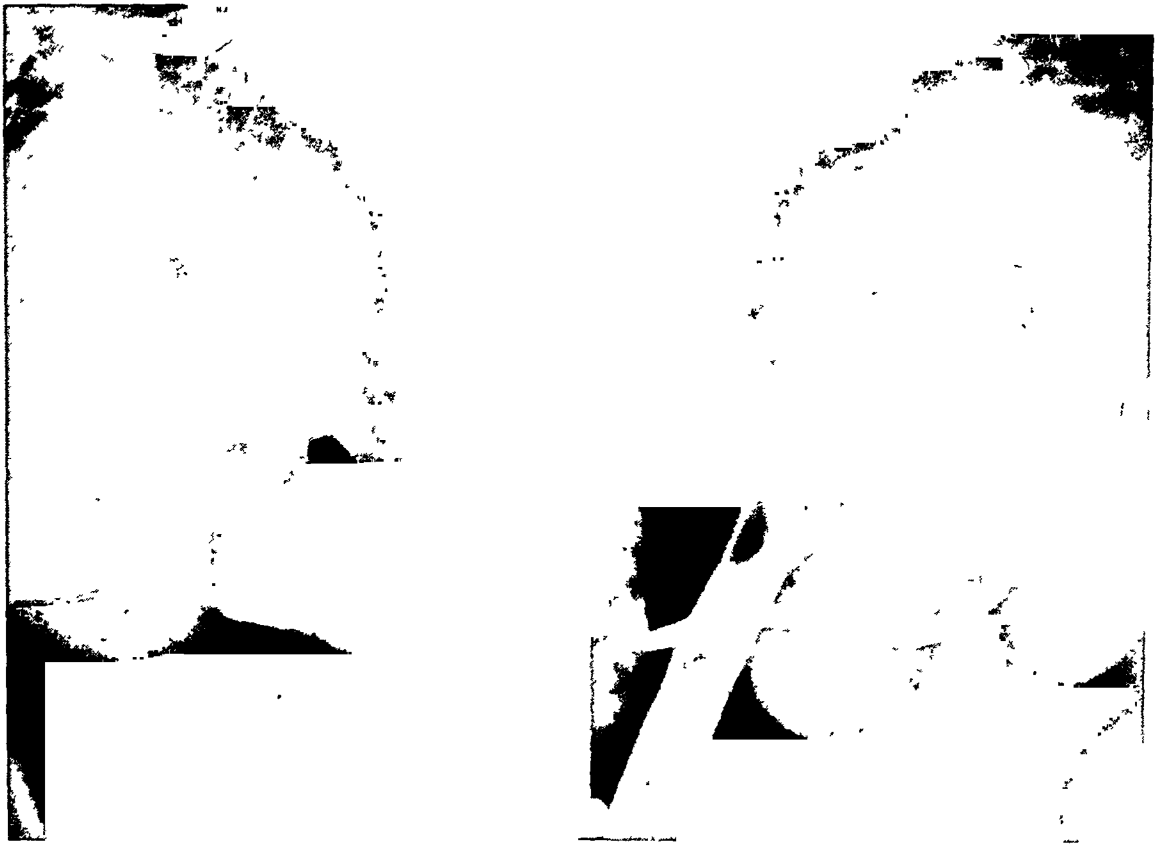

Fig. 13.—Preoperative (left) and postoperative (right) urethrograms, indicating results (see text).

para-urethral areas, maintains, increases, and renews itself, notwithstanding dilations of the stricture and the lack of canalicular extensibility.

The operation recommended will reveal the presence and participation, in varying degrees, of sclerous invasion of sections of the periurethral and para-urethral areas. In cases of unsuspected benign lesions, which would make one think of a process localized to the epitheliodermic canalicular wall, one will find thickening of the superficial conjunctive fat tissue, alteration of the muscular plane of the bulbus cavernosus and, near the area of the corpus spongiosum, great difficulty in separating, in the normal way, its investing aponeurosis. Once the latter is lifted it will be possible to see the pallor of the organ, its lack of expansion and hardening solidity of the urethral walls.

For this double reason the processes of the periurethral and para-urethral areas should be examined ureterographically in all cases of urethral constriction, and the facts observed should be borne in mind with regard to prognosis and the treatment.

Indications for Operation.—The operation should be performed when the semiologic urge is not well realized, or when, being well realized, it presents extension of the process to the periurethral area. Other conditions justifying its use are extended invasion of the corpus spongiosum, invasion of the area of the aponeurotic muscle and infiltration of subcutaneous cellular-adipose tissue.

For this reason either a single or a multiple stricture, being hard and intense, will respond to this procedure, as will the strongly sclerotic type, hard to expand, which retracts over itself; the irritable, bleeding stricture that causes fever; the stricture associated with fistula, and the urethral scissure due to trauma.

The Operation.—This therapy consists in principle of perineal intervention, of course with care not to open the scrotal loggiae.

First Stage (Fig. 1) : The extra-aponeurotic cell adipose tissue (Colles' space) which infiltrated shall appear in concretions compressing the superficial perineal aponeurosis.

Second Stage (Fig. 2, *A* and *B*) : Incision of the superficial perineal aponeurosis together with the bulbocavernous muscle, which will "free" the space that surrounds the corpus spongiosum (attrition area to be borne in mind, especially in the presence of acute perineal processes).

Third Stage (Fig. 3, *A* and *B*) : Incision and careful detachment of the lamina investing the corpus spongiosum (aponeurosis), which will leave that body free to expand, allowing one to see its volume and color alterations in case of mere constriction. This will not happen in the frequent cases of sclerous alterations, which maintain the corpus spongiosum in its reduced volume, without expansion and without assumption of the normal dark bluish color. During this stage, one should be careful not to cut the bulbar spongiose body, in order not to expose the urethra.

Fourth Stage (Fig. 4) : In the exceptional case it is sometimes necessary, as a complementary procedure, to incise the corpus spongiosum, leaving the urethra free in a wide space, without opening it, if there is suppuration or strong fibrous infiltration of the corpus spongiosum or if it is necessary to catheterize through the perineal meatus; unexpected operative opening of the urethra would not have, on the other hand, great importance.

Fifth Stage: At this point an attempt is made to catheterize the urethra through its natural channel, and, surprisingly enough, it is possible to pass large catheters where only filiform ones passed which enables one to use, rapidly and successively, probes of larger and larger size and to leave permanently the largest one used in the operation. One may use successively single and conducted filiform sounds, from the bequill to the olive-tipped and *beniqvé*, starting with the smaller calibers. The operating surgeon stands to the left or to the right of the patient in directing their progress, thus avoiding perforation of the canal, which otherwise would not cause serious consequences. *In no case should one employ round or straight Olivares stretchers, which would not pass through the narrow channel and so would damage the canal.*

Sixth Stage (Fig. 5) : When the penile prescrotal portion of the urethra is profoundly altered, it will be possible to employ, in the altered area, the same handling of separation of the planes, care being taken on reaching the corpus spongiosum body, which is more vulnerable than in the restroscrotal sector.

Seventh Stage (Fig. 6) : The perineum thus opened is closed by union and full joining of the superficial planes. No special suture is placed in the periparaurethral block incised. A light drain of iodoform gauze, introduced through the rear end of the incision, is left for forty-eight hours. This stage ends with a compressive dressing.

Postoperative Period.—The urethral catheter should be kept in place for a week, and after a fortnight it will be possible to complete the dilation that alows one to obtain the largest possible diameters in a few sessions.

With a short postoperative period it is possible to maintain long-lasting urethral dilations not obtained by other treatments, besides the anatomopathologic modifications obtained through the opening of the constrictions and of chronic and silent areas of infection.

A counterproof will sustain my technic. I have performed my intervention of releasing the para-urethral and periurethral planes without leaving urethral drainage in patients who were too difficult to catheterize and on whom hypogastric cystostomy had been performed, and was able to prove a few days later that it was possible to catheterize and widen the urethra with urethral catheters of higher caliber.

ZUSAMMENFASSUNG

Der Verfasser beschreibt die Natur, die Pathogenese, das pathologische Bild und die Behandlung der Harnröhrenstriktur, zählt die Indikationen zum chirurgischen Eingriff auf und erörtert die von ihm angewandte Operationstechnik.

Er weist darauf hin, dass der Krankheitsprozess nicht auf die perikanalikulären Gebiete des Schwellkörpers beschränkt zu sein braucht, sondern sich durch latentes Eindringen in den Bulbus cavernosus des aponeurotischen Muskels und in das oberflächliche Gewebe des Dammes auf paraurethrale Gebiete ausdehnen kann.

Zur Darstellung der erzielten Behandlungserfolge werden präoperative und postoperative Urethrogramme gezeigt. Der Verfasser hat die Vorzüge seiner Technik an Patienten nachgewiesen, bei denen vorher eine Katheterisierung zu schwierig war und bei anderen, an denen eine hypogastrische Cystostomie ausgeführt worden war.

RÉSUMÉ

L'auteur décrit la nature, la pathogénie, le tableau pathologique el le traitement du rétrécissement uréthral, énumérant les indications chirurgicales et discutant la technique opératoire.

Il montre que le processus pathologique ne se limite pas aux régions précanaliculaires du corps spongieux mais peut s'étendre á la région para-uréthrale avec envahissement muet du tissu musculaire et des tissus superficiels du périnée.

Des uréthrogrammes pré- et postopératoires éclairent les résultats obtenus. L'auteur a démontré les avantages de sa technique dans des cas où un cathétérisme s'avérait trop difficile ainsi que dans des cas avant subi une cystostomie hypogastrique.

SUMARIO

Descreve a patologia e o tratamento da estenose uretral, fazendo as indicações cirurgicas e discutindo as tecnicas operatorias.

Acentua que o processo patologico nao se limita as areas pericanaliculares dos corpos esponjosos mas pode se extender a area para-uretral invadindo, principalmente, o bulbo cavernoso do musculo-aponeurotico e as do tecido superficial do perineo. As uretrografias no pre e no pos-operatorios são apresentadas. O A. demonstra as vantagens de dua technica nos casos em que inicialmente era dificil cateterizar e que foram submetidos a cistostomia hipogastrica.

Congenital and Acquired Obstructions of the Urinary Tract

J. SYDNEY RITTER, M.D., F.A.C.S., D.A.B.*
NEW YORK CITY, NEW YORK
AND
HENRY RITTER, JR., M.D., F.I.C.S.**
SAN FRANCISCO, CALIFORNIA

A brief review of the commoner causes of urethral obstruction is presented, emphasizing congenital phimosis, stenosis of the external urinary meatus, valve of the posterior urethra, and contracture of the vesical neck.

Acquired inflammatory and traumatic strictures are considered, as well as foreign bodies, calculi and tumors. Basically, treatment is aimed at promoting an adequate flow of urine by removal of the lesion or urethral dilation. The history, embryonic background and anatomic aspects of the urethra are considered.

Most prominent causative factors were instrumentation and postgonorrheal urethritis.

The need of early recognition of these obstructive lesions is emphasized. Prompt, adequate treatment must be given to prevent irreversible damage to the upper part of the urinary tract.

OBSTRUCTION to the free flow of urine anywhere between the glomerulus and the external urinary meatus is an urgent problem requiring immediate relief. An understanding of the basic uropathologic and the regional anatomic background is mandatory.

Review of the records at Sequoia Hospital, Redwood City, California; Community Hospital, San Mateo, California and of the private practice of one of us shows that 98 cases of obstruction of the lower part of the urinary tract were observed and treated during the past two years (exclusive of prostatism). So large a number of cases emphasizes the importance of this problem.

To discuss congenital and acquired obstruction of the urinary tract both from our own viewpoint and from that of others proved such an ambitious undertaking that our remarks herein will be limited to the commoner obstructions of the lower part of the tract in the male (see table). In subsequent articles other obstructive uropathic conditions will be considered.

History.—Historically, Folsom noted a reference by the Hindus to the treatment of urethral pathologic changes as early as 500 B.C. About 400 B.C., Hippocrates described urethral abscesses. Celcus, at the beginning of the Christian era, discussed impacted urethral stones. Shortly afterward, Galen described perineal urethrotomy.

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*Department of Urology, New York Polyclinic Medical School and Hospital, New York, New York, (by invitation).

**Department of Urology, University of California Medical Center, San Francisco, Calif.

During the sixteenth century bougies of wax, gum elastic, whalebone and flexible ivory were used, and in 1855 McDowell employed slippery elm bark for urethral dilation. The technic of internal and external urethral compression was practiced by the French in the early nineteeth century. Although cauterization of strictures was first described five centuries ago, this technic persisted into the nineteeth century.

Internal urethrotomy was reported by De Vega and Diaz four hundred years ago but did not come into wide use until 1825, when it was employed by Stafford. The widely used Maisonneuve urethrotome was developed in 1854. External urethrotomy was reported by Wiseman in the seventeenth century and used extensively by Jameson (1844) and Syme (1884). In 1878 Otis studied pathologic conditions of the male urethra and theorized that "the normal urethral calibre" was "definitely larger than had been previously thought." Otis demonstrated a relation between the penile circumference and the anterior urethral calibre, and his urethrometer successfully calibrated the anterior urethra. The existence of strictures of large calibre and the cause of persistent "gleet" was also discussed.

Although the history of gonorrhea goes back to the fifteenth century B.C., as recorded in the Old Testament, the disease was not so named until Galen's day. In the nineteenth century Finger noted submucosal penetration of the organisms and deep tissue reactions. In the twentieth century Pelouze described the immunity of squamous epithelium and the susceptibility of columnar epithelium to this disease.

Roentgenographic study of the lower part of the urinary tract was first done by Von Zeissel on a cadaver in 1902. Air contrast studies were performed by Keller in 1904. Stricture visualization, with the use of radiopaque Argyrol, was described by Cunningham in 1910. In 1922 Beclere and Hertz described the oblique position now employed. Although iodized oil media were described by Sicard and Forescier in 1924, it remained for Flocks, in 1933, to suggest the use of radiopaque media in jelly suspension for good visualization. We use this type of medium for our studies. Recently, the use of Thixokon® for urethrographic procedures has been favorably reported upon by Kaufman and Denman. They noted the lack of bubbles in the solution, which is easily injected and is considered safe even if absorbed intravascularly.

Embryonic Development.—For a thorough understanding of obstructive urethral disease a brief consideration of the pertinent embryologic aspects of the region is advisable. Division of the common cloaca into the dorsal rectal area and the ventral urogenital sinus is completed by the seventh intrauterine week, when the urorectal septum fuses with the cloacal membrane. The urogenital sinus subdivides into two portions: the dorsal section, into which the mesonephric ducts enter to form the bladder and the posterior portion of the urethra, and the ventral section, which forms the remainder of the urethra.

The genital tubercle forms on the surface of the ventral body and becomes elongated. The cloacal membrane invaginates to form a vertical urethral groove, into which the urogenital sinus opens caudally. On the undersurface of the elongated genital tubercle paired lateral urethral folds appear, while more laterally labioscrotal swellings arise. The perineum forms as the urethral groove is separated from the anal pit. By the twelfth week the urethra is formed as the urethral folds fuse from the base of the penis forward, closing off the urogenital

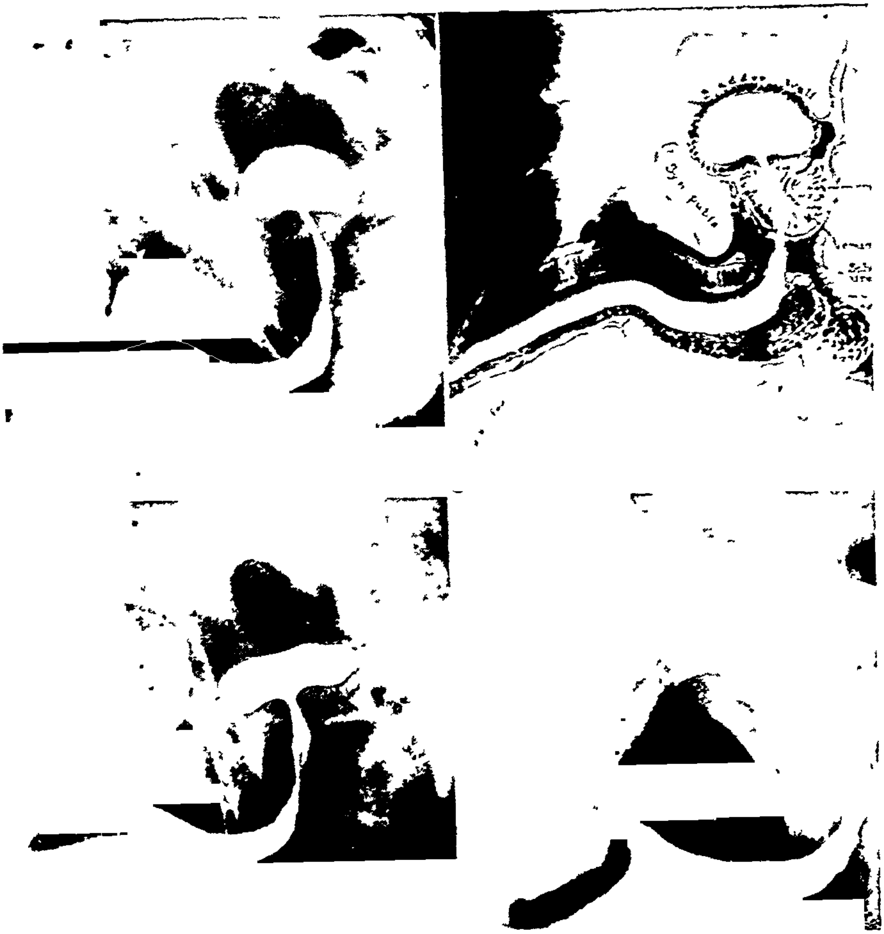

Fig. 1—Normal urethrograms Film at lower right illustrates angulation at penoscrotal juncture from inadequate penile traction. *(From Beard, D. B., Goodyear, W. B., and Weems, H. S.:* Radiologic Diagnosis: Lower Urinary Tract, 1952. *Reproduced by courtesy of Charles C Thomas, Publisher.)*

sinus. These fused edges form the penoscrotal raphe. At the ventral base of the glans penis the urethral plate splits and closes last, forming the fossa navicularis and the external urinary meatus. The prepuce develops from the growth of ventral epithelium arising at the glans area of the genital tubercle. Internally, the verumontanum develops from remnants of the müllerian duct at the fourteenth week of fetal life.

Anatomic Features.—The normal male urethra averages 20 cm. in length and runs an S-shaped course. An elastic tube, the urethra provides for the passage of urine, ejaculatory fluid and glandular secretions. The prostatic portion of the urethra, lined with transitional cell epithelium, is 2.5 cm. long and extends from the neck of the bladder to the triangular ligament. This is the widest and most dilatable portion of the urethra and has an average calibre of 45 F. On the floor of the urethra the prostatic acini terminate and the verumontanum eminence, with its ejaculatory ducts, appears.

Stratified columnar epithelium lines the short (1 cm.), narrow membranous portion of the urethra, which lies firmly fixed within the triangular ligament behind the symphysis pubis. The lumen here is only moderately dilatable and averages 27 F.

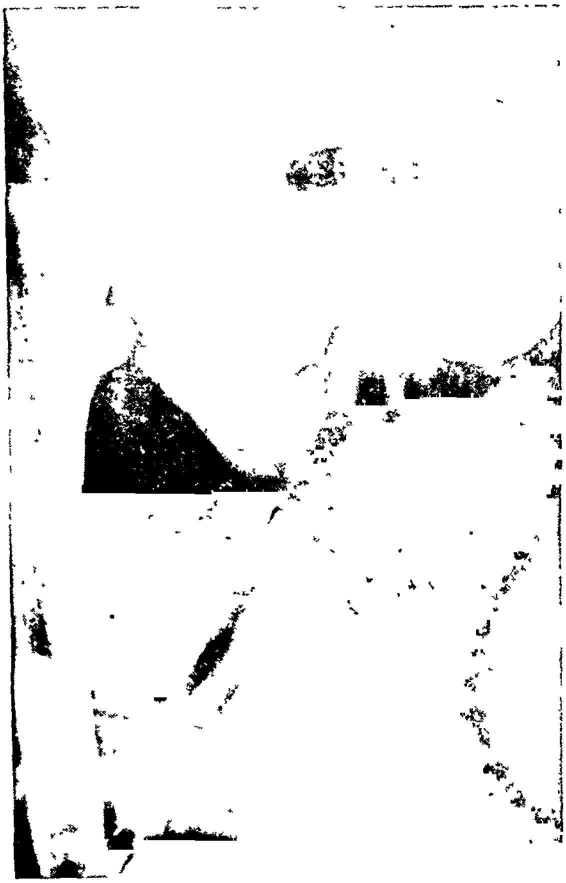

Fig. 2.—Contrast air study of special value in location of nonopaque urethral calculi.

Cowper's bulbouretheral glands lie posterolaterally in the urogenital diaphragm. Together the prostatic and membranous areas form the posterior portion of the urethra.

The long anterior portion of the urethra is lined by pseudostratified epithelium as far as the fossa navicularis, where squamous cells appear. In its obliquely forward 17 cm. course from the outer layer of the triangular ligament, the anterior portion is surrounded by the corpus spongiosum, except about the proximal bulbous area, Here fixed in position, the urethra is uncovered and easily traumatized. The bulb is wide and calibrates 33 to 36 F. The bulbourethral glands open on the floor of the bulbous portion of the urethra. Along the roof of the anterior portion lie the numerous mucus-secreting glands of Littré. The pendulous portion of the urethra ranges from 27 to 33 F. The fossa navicularis is one of three wide areas (bulb and prostatic region) of the urethra.

The external urethral meatus is a narrow vertical slit (21 to 27 F). An instrument that can pass through this least dilatable portion of the urinary canal should pass easily through the normal urethra.

The urethra is so constructed that its diseases encroach upon and distort the lumen. The location and extent of these lesions are demonstrable on studies with contrast media. The normal urethrogram is a tubular opacity, widest in the bulbous area and narrowing proximally about the sphincters (Fig. 1). The external meatus and the fossa navicularis are distorted by retrograde injection of dye and are best seen on voiding urethrograms. A posterior spindle-shaped filling defect represents the verumontanum. Penoscrotal angulation may be present, unless traction is exerted on the penis at the time the roentgenogram is taken. An oblique film gives the best visualization of the entire urethra. The urethrographic process is simple, rapid and painless and provides a permanent record.

Our technic is first to empty the bladder. Retrojection of radiopaque jelly has usually been done by holding a 2-ounce Asepto syringe, fitted with a rubber acorn tip, against the meatus. Roentgenographic exposure is made during injection. In the past we have supported the penis with a bare or lead-gloved hand; recently, however, our respective radiology departments have become concerned about the amount of exposure we have been getting, so that we are now using the Brodny clamp and are stepping out of the immediate roentgenographic field. Retrojection of air has been valuable in outlining pathologic conditions within the urethra, especially nonopaque calculi (Fig. 2). The lack of

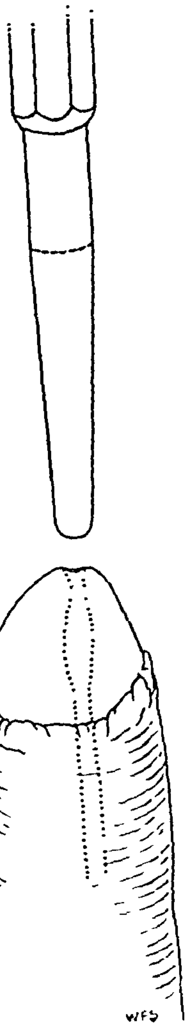

Fig. 3.—Plastic meatal dilator 8 cm. long, 6 F to 28 F caliber. *Above*, meatal dilator in place; *below*, sharp meatal dilator perforating urethra.

urethral irritation that results from this method favors its more widespread use.

Congenital Urethral Obstructions.—By custom, first consideration is given to the congenital causes of urethral obstruction. Urethral anomalies are caused by maldevelopment of the genital tubercle and the urogenital sinus. Arrest may take place at any stage of embryonic development.

1. *Absence of the Urethra* is rare. It may be associated with absence of the penis but is more commonly observed in male infants in whom the penis is normally developed. This condition may be incompatible with life. Death *in utero* results from pressure of the distended bladder on fetal circulation. The child may survive with an outlet through the rectum or the urachus. Early urethrotomy is mandatory and delayed secondary urethroplasty advisable.

2. *Imperforation of the External Urinary Meatus* is not uncommon. It is remedied by immediately opening the outlet in the glans penis. If there is more extensive obliteration of the urethra, the

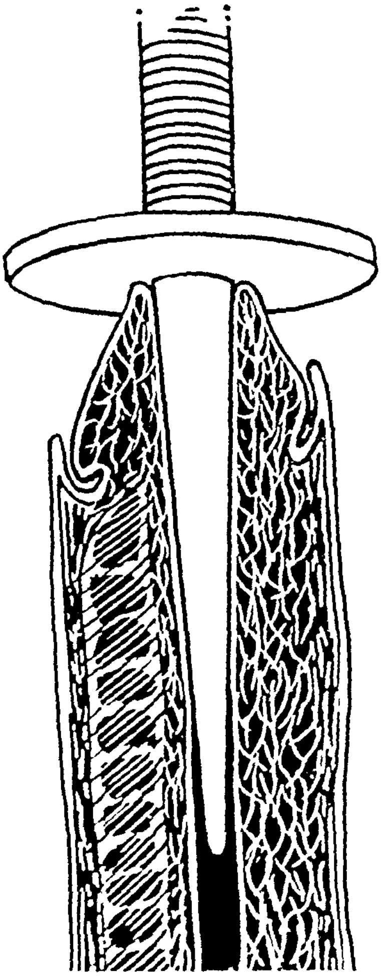

Fig. 4.—Suggested treatment of meatal stenosis with modified urethral dilator. Tapered dilator is 4 cm. long, caliber 6 F at tip and 14 F at base.

chances that the child will live are poor.

3. *Congenital Cysts of the External Urinary Meatus* may cause obstruction.

4. *Congenital Phimosis,* or narrowing of the preputial orifice, is the result of maldevelopment. The prepuce cannot be retracted and is often made adherent to the glans by retained secretion. The hypertrophic type covers the glans, and the orifice is small. In the atrophic form the prepuce is short and the opening small. The orifice is often so narrowed that urination is obstructed. Treatment is by circumcision.

5. *Congenital Stenosis of the External Urinary Meatus* is very common; yet it is frequently unrecognized until symptoms occur (usually consisting of ulceration at the meatus and a drop of blood on the diaper). In Campbell's opinion this condition, with its grave portent, is often inadequately diagnosed. He stated that one-fifth of all pediatric urologic disorders have meatal stenosis as their basis. In cases of hypospadias, the defect in fusion of the urethral folds is usually associated with external meatal stricture (50 per cent). Smith has noted that, while the meatal orifice is in the midline, the penoscrotal raphe may deviate to one side or the other. Rau stated that 2.5 per cent of all urethral strictures occur at the external urethral meatus and that narrowing is limited to the distal 3 mm. of the urethra. Early circumcision has been advised by Lowsley and Kirwin, in whose opinion meatal stenosis accompanies a long prepuce. On the other hand, Berry and Cross calibrated the meati of 200 circumcised and uncircumcised infants under 18 months of age: only 30 per cent of the patients in the circumcised group had a meatal opening of 14 F or larger, yet 53 per cent of the patients in the uncircumcised group did. Ten per cent of the patients in the circumcised group had

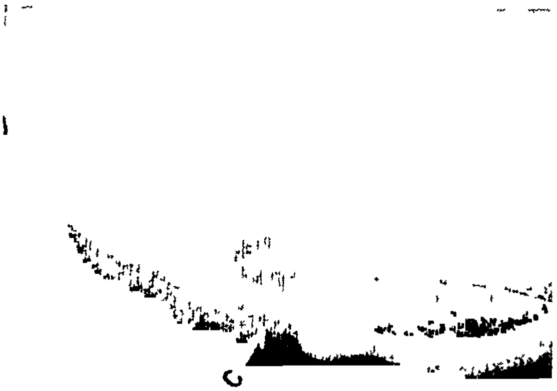

Fig. 6 —Congenital hypertrophy of verumontanum in boy 5 years old. *(From Kjellberg, S. R., Ericsson, N. O., and Rudhe, U.: The Lower Urinary Tract in Childhood; reproduced by courtesy of Almquist and Wiksel, Stockholm.)*

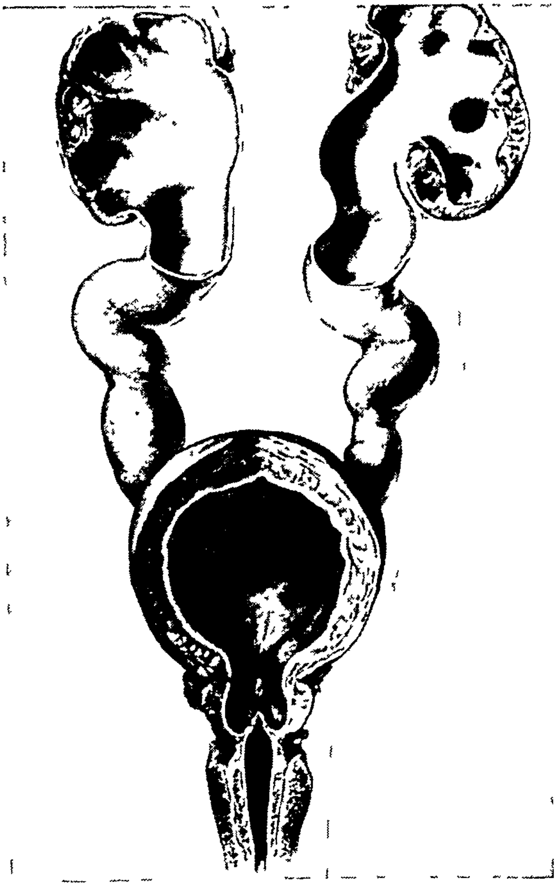

Fig. 5.—Congenital inframontal urethral valve with proximal dilatation of urinary tract. *(Reproduced by courtesy of Ciba Pharmaceutical Products, Inc.)*

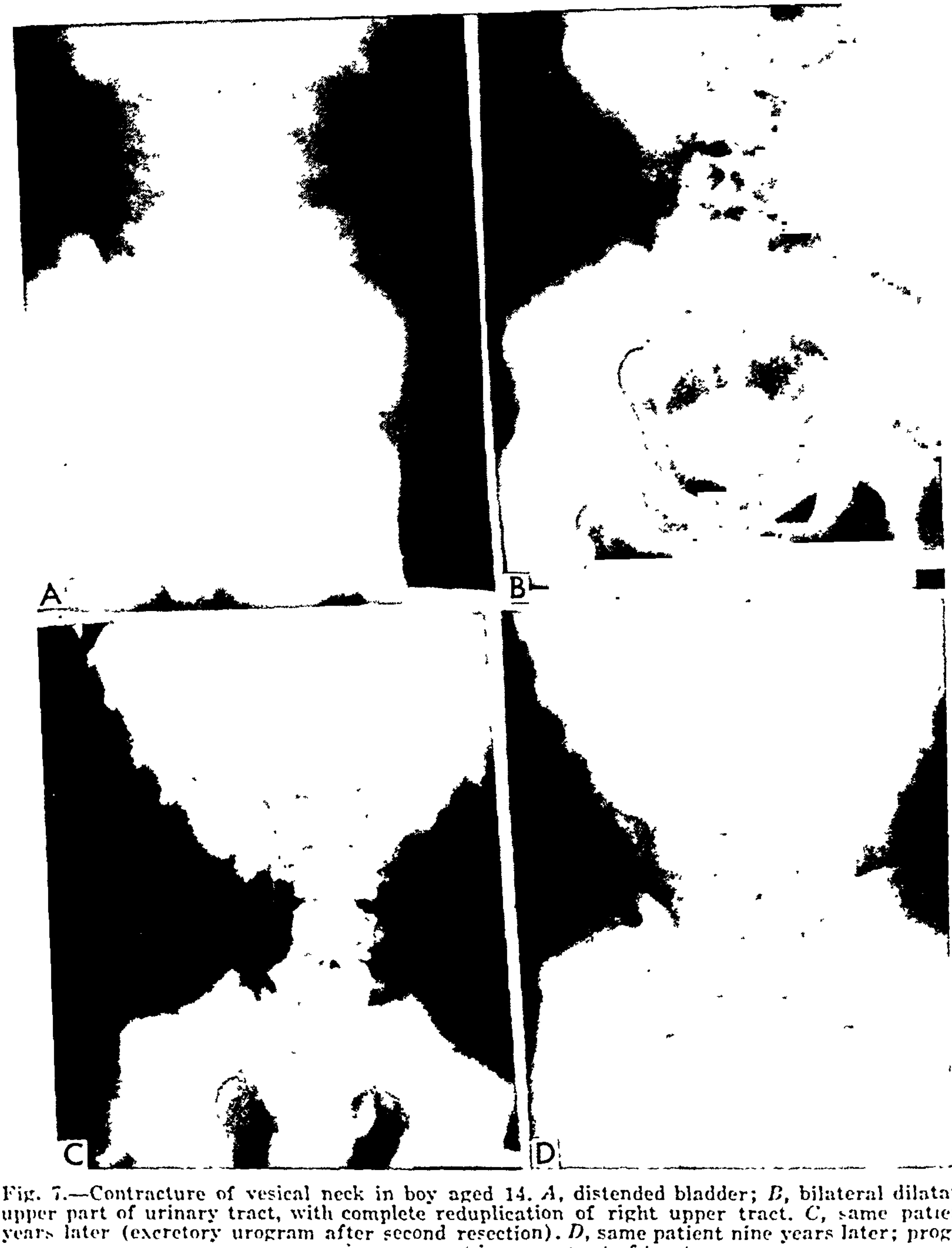

Fig. 7.—Contracture of vesical neck in boy aged 14. *A*, distended bladder; *B*, bilateral dilatation of upper part of urinary tract, with complete reduplication of right upper tract. *C*, same patient two years later (excretory urogram after second resection). *D*, same patient nine years later; progressive improvement in upper part of tract.

stenoses tighter than 10 F, as compared with only 3 per cent of the uncircumcised infants. Berry and Cross postulated that early circumcision is related to ulcerative meatus and secondary stenosis; they suggested a delayed procedure. The basis of the ulceration is probably mechanical and chemical (wet diaper) irritation. We have speculated about the use of a thin, emollient, acidic ointment over the meatus of

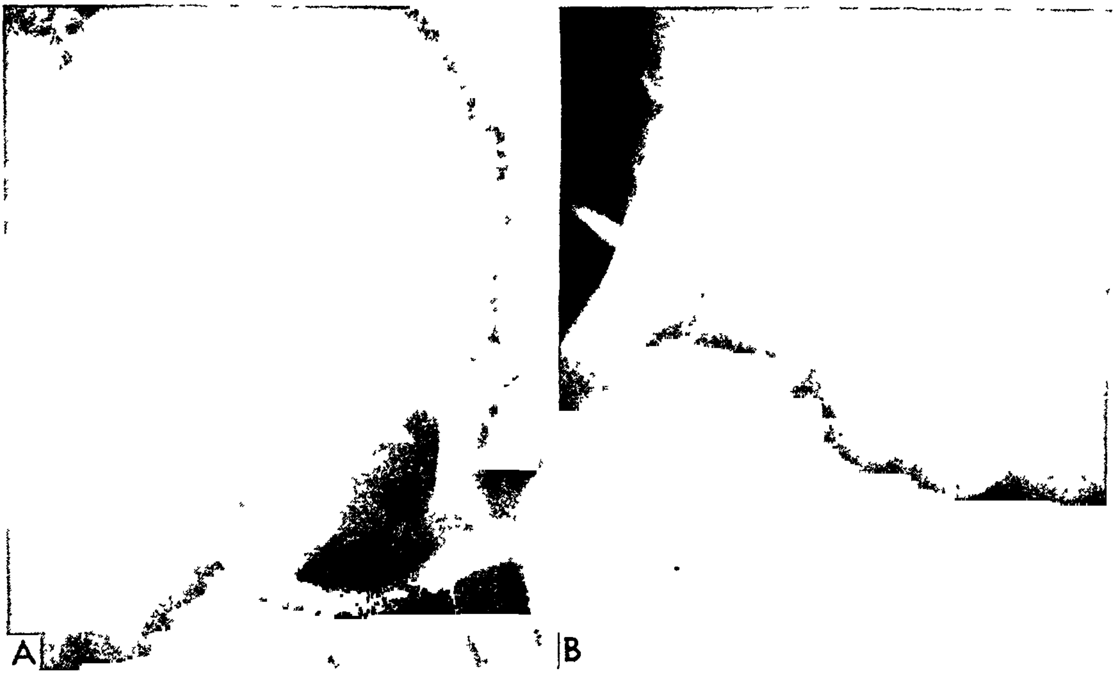

Fig. 8.—*A*, urethrogram depicting bulbomembranous stricture with posterior urethral fistula ("watering can" perineum). *B*, urethrogram demonstrating membranous stricture, spindle-shaped verumontanum and elongated posterior portion of urethra.

the circumcised infant to prevent such irritation.

Manifestations of obstruction may include straining at urination, distention of the bladder, overflow urinary incontinence, enuresis and ulceration about the meatal lips. Compressing the meatus horizontally will show the true size of the vertical meatal slit. Barnes calibrated the normal infant meatus at the age of 1 year, at 10 F; at 5 years, at 15 F; at 10 years, at 18 F, and in the adult, at 26 F. The diagnosis is confirmed by observation of the size and direction of the stream of urine. In a patient with a pinpoint meatus, urethrographic investigation and studies of the upper part of the tract are advisable to rule out the presence of the effects of back pressure.

Early correction of this condition may well forestall the onset of acute pyelitis. Adequate meatotomy with subsequent dilation is necessary. We slit the bottom commissure with a bistoury knife or a No. 11 scalpel blade gently inserted 1 cm. into the meatus in the trough of a grooved director. No anesthesia is used for infants and young boys. For adults, topical 4 per cent procaine hydrochloride is sufficient. Bleeding is controlled by digital pressure. Immediate dilation with a well-lubricated meatal dilator is done. We instruct the parents or the older patients to hold the glans penis on the stretch between the thumb and forefinger of one hand to straighten the urethra. The meatal dilator is held in the other hand and directed straight down along the course of the urethra to a depth that gives appropriate caliber to the meatus.

One commonly used dilator (Fig. 3), made of rigid lucite, measures 8 cm. in length and ranges from 6 F to 28 F in diameter. In our opinion this instrument is too sharply pointed for safety. Since there are no markings to guide the user, overzealousness may result in undue depth of insertion and perforation of the urethral wall. Catheter plugs have also been used for meatal dilation. Since they range from 17 F to 28 F in calibre, there is usually disproportion in introducing them through the external meatus. The use of oral thermometers has been advocated for meatal dilation. These range from 9 F to 13 F in calibre. After one of us spent a busy evening picking pieces of a broken thermometer from a baby's urethra and calming his frantic parents, this method was hastily abondoned. Some of our colleagues have used a well-lubricated cotton-tipped applicator stick for meatal dilation. For home use we do not consider this tapered well enough to facilitate easy introduction. In addition, there is the possible danger of losing the tip of cotton in the urethra. We have recently designed a series of smooth, tapered plastic meatal dilators with rounded tips and limiting collars at their bases (Fig. 4).* These dilators are easily cleansed and do not require sterilization. The smallest dilator ranges from 6 F to 14 F in a 4 cm. length and suffices for preliminary treatment. The medium-sized dilator measures 12 F to 18 F and the largest 16 F to 24 F. Each of the dilators measures 5 cm. in length. These dilators are marked so that the proper size can be identified easily by the physician. Thus we hope to prevent the drawbacks previously outlined. The projecting collar

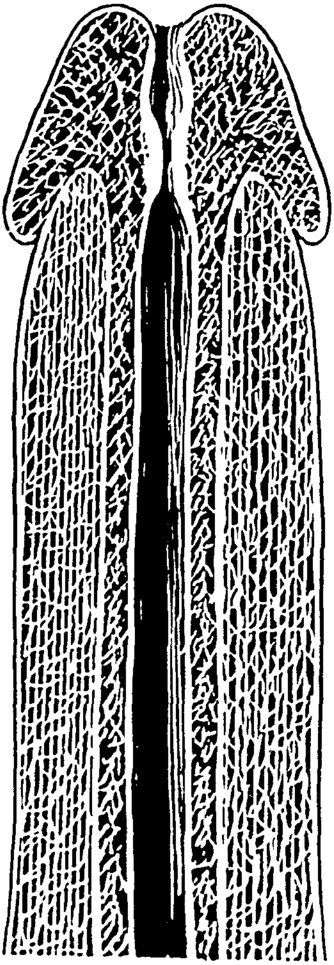

Fig. 9.—Site of postresection trauma (stricture) at fossa navicularis, with proximal widening of urethra.

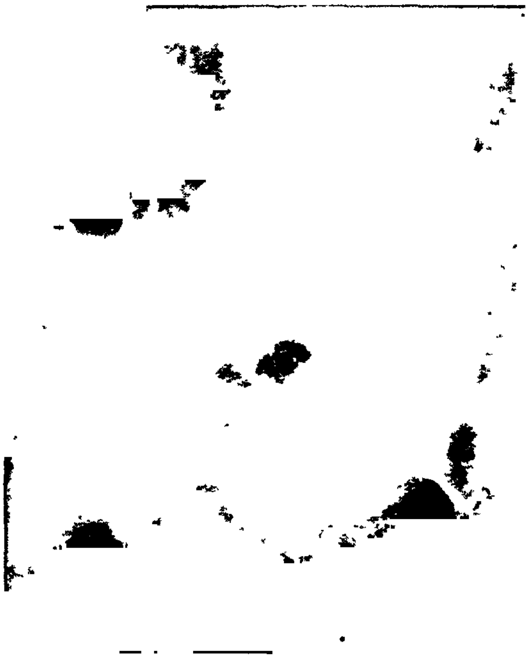

Fig. 10.—Urethrogram depicting obstruction due to carcinoma of urethra.

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*Designed with the help of Mr. Fred [illegible] [illegible] Cystoscope Makers, Inc.

limits the depth of penetration and makes this instrument relatively foolproof, yet it permits adequate meatal dilation. The best results are obtained from twice weekly, progressive use of these well-lubricated dilators for at least six weeks.

6. *Congenital Stenosis of the Urethral Canal* is not an uncommon condition in the anterior portion of the urethra. The narrowing usually occurs at the bulbomembranous juncture or at the proximal margin of the fossa navicularis. True scar tissue due to local inflammatory change is usually absent. The diagnosis is confirmed by urethroscopic and urethrographic study and the use of sounds. Treatment consists of intermittent dilation until the area has reached a suitable calibre that becomes permanent.

7. *Congenital Valve of the Posterior Portion of the Urethra* is frequently listed as a cause of urinary disturbance in male children, resulting in back pressure with progressive dilation of the bladder and the upper part of the tract. The condition was first described by Langenbeck in 1902. Young (1913) classified the most common form as inframontal (Fig. 5), extending from the verumontanum anteriorly to the circumference of the urethra in the bulbomembranous region. The less common supramontal form extends upward toward the internal sphincter. The iris form is unrelated to the verumontanum and may be observed above or below this structure. The passage of an instrument from below is unimpeded, since the valves collapse inward. Outflow of urine is inhibited, since the valves balloon against the roof on voiding. Etiologic theories include persistence of the urogenital membrane, wolffian-müllerian duct remnants and fusion of the urethral roof with the verumontanum at a time of embryonic epithelial overactivity. The symptoms are obstruction and secondary infection, and resemble those of prostatic obstruction. The valves are usually diagnosed in young persons but may not be seen for many years. Pulling at the prepuce and glans penis in infants may be a significant sign, as may redness of the face from straining at urination. Overflow incontinence and bedwetting are often present. A distended bladder may be observed. In differential diagnosis, chronic nephritis must be considered. Urinalysis usually reveals pus, and there may be diminution of renal function. Excretory urographic study often demonstrates proximal distention of the urinary tract. Urethroscopic study is essential, since the valves are best seen as the instrument is withdrawn. Controversy exists as to whether treatment should consist of transurethral resection or open excision.

8. *Congenital Hypertrophy of the Verumontanum* has been observed urethroscopically (Fig. 6). The verumontanum is greatly enlarged and elongated, may obstruct the posterior urethra and is frequently associated with posterior urethral valves. Campbell noted Brody and Goldman's etiologic hypothesis of stimulation by circulating estrogens during fetal life. Although partial endoscopic excision has been advocated when the hypertrophy is obstructive, the danger that infertility may result from this procedure must be considered.

9. *Congenital Obstruction of the Vesical Neck* is more common than was once believed, according to Burns and Shashy. In a study of 129 cases of obstructive lesions of the lower part of the urinary tract in children, these authors noted such contractures in 123. The condition must be differentiated from urethral valves, hypertrophy of the verumontanum and neurologic maldevelopment. Neuromuscular imbalance between the nerve fibers supplying the detrusor muscle and the external urinary sphincter may cause this

condition. Careful examination to rule out defects of the spinal cord is emphasized. Barnes and Hadley questioned whether stenosis of the vesical outlet may be due to fibrosis, muscular hypertrophy or sphincteric spasm. A great many patients with enuresis are said to have obstructive lesions of the lower part of the tract. In discussing congenital contracture of the vesical neck in children, Deakin expressed the opinion that with regard to this condition the male predominates in at least a 2 to 1 ratio, whereas Burns stated that the incidence is equal for the sexes.

The dangers are those of embarrassment of the upper part of the urinary tract, impaired renal function, infection, malnutrition, acidosis and even uremia. Parenchymal destruction, rather than obstruction of the lower part of the urinary tract, proves fatal. Common symptoms observed in patients with obstruction of the lower part of the tract include straining to urinate, overflow incontinence, retention of urine and bedwetting. Chills and fever, associated with pyuria, are common. Diurnal wetting in older children may be a significant sign. The diagnosis is made cystourethroscopically.

No single type of treatment has been uniformly successful. Removal of the primary lesion and secondary plastic repair are usually advisable, although simple dilation may suffice. Long-term drainage is needed when there is damage to the upper part of the tract. Deakin stated that T-tube ureterostomy with endoscopic resection of the vesical neck is the treatment of choice. Postoperative dilation is required. The age of the patient governs the approach, since the urethral calibre must be large enough to accommodate an instrument of adequate size if transurethral therapy is considered. In Burns' opinion this factor rules out endoscopic treatment for children less than 4 years old and that an open direct approach to the neck of the bladder is best for these patients, with revision of the obstructive area. We have used the infant (12 F) McCarthy resectoscope in this region with some degree of success, but essentially we agree that resection is best done by larger instruments in older children with larger urethras. The prognosis depends upon the extent of damage to the upper part of the tract.

The problem of retrograde ejaculation following transurethral resection proximal to the verumontanum is of grave import. Ten years ago a 14-year-old boy was examined who had passed blood in his urine after abdominal trauma during a football game. A greatly distended bladder and a bilaterally dilated upper portion of the urinary tract were observed (Fig. 7, *A* and *B*). Endoscopic resection of the contracted neck of the bladder was carried out on two occasions during the next three years (Fig. 7*C*), resulting in progressive improvement in function of the upper portion of the tract (Fig. 7*D*). The patient is now 24 years old, married, and wants children. The urethroscope revealed backward tilting of the orifices of the ejaculatory ducts, due to proximal urethral scarring. The patient has retrograde ejaculations. He and his wife now speak in terms of bitterly disappointed parenthood.

Acquired Obstructions.—1. *Inflammation:* a. *Inflammatory stricture* is the most common acquired urethral obstruction and is reported by some authors as comprising 90 per cent of all urethral strictures. It is usually observed in persons 25 to 50 years of age. Strictures resulting from gonorrhea or nonspecific urethritis are of wide calibre and usually involve the bulbous area of the anterior part of the urethra (Fig. 8*A*). Ten per cent of these are multiple, and the narrowest stricture lies posteriorly. The opening of the stricture is usually round. In the gradual pathologic process, mucosal inflammation is followed by fibroblastic infiltration, destruction of the lining membrane, submucosal fibrosis and periurethral glandular reaction. Thrombophlebitis of the corpus spongiosum results in further obstructive scarification of the urethral canal. The symptoms include obstruction, infection, painful erection, retrograde ejaculation, epididymitis and gleet. Urethrographic study may reveal the length, calibre, multiplicity and location of the stricture. It also determines whether the stricture is impenetrable. These observations are confirmed urethroscopically and by instrumentation.

Primarily, inflammatory strictures are best treated with urethral dilation. It has been postulated that such dilation may lead to the absorption of scar tissue. Strictures tend to contract after dilation, and the frequency of treatment is dependent upon individual response. It is best to start with a larger dilator and drop down to one of an acceptable calibre. These instruments should never be forced. If the calibre is 16 F or less, we tend to use flexible filiforms and followers. We never use a rigid instrument unless the calibre is at least 18 F, since we are convinced that smaller rigid instruments are too sharply pointed and may cause false passages. We consider that the easy passage of a 26 F sound indicates a good result. We inform the patient that this is a long-term, perhaps permanent condition that requires regular treatment. Initial dilation may be intermittent or continuous. In the continuous type, difficult insertion may require tying the dilator in place and keeping the patient at bed rest. Without retention, intermittent dilation usually suffices. The dangers are false passage, bleeding with clot formation, and infection.

If the strictures resist dilation, a variety of surgical procedures is available, starting with external meatotomy. Many texttooks condemn internal urethrotomy as a dangerous and outmoded procedure. Not only in our practices, but in those of many of our colleagues, we have been gratified to learn that this is not the case. If done carefully, it is a simple, effective procedure, especially in the anterior portion of the urethra. The precautions include asepsis, hemostasis and careful incision. The incision is made from within outward. We have been accustomed to a dorsal incision, but Emmett stated that he noted no difference whether the cut was made ventrally or dorsally. If the stricture accepts only a filiform, the Maisoneuve urethrotome is preferred. For strictures of large calibre which re-form rapidly, the Otis urethrotome is employed. Immediate postoperative dilation to 26 F or 28 F is advised. External urethrotomy or stricture resection may be necessary for extensive, rigid, impassable strictures, which commonly occur in the bulbomembranous area, and also applies when perineal fistulas occur (Fig. 8*B*).

The local injection of hydrocortisone has been reported by Lyons and Bonner to inhibit fibroblastic proliferation. They consider the success of treatment unrelated to the duration of the stricture. Raines and his co-workers, after sounding, have used oral pregnisolone effectively to prevent the re-formation of strictures.

b. *Tuberculosis of the urethra* is relatively uncommon. Ulceration of subepithelial tubercles tends to form fibrosis and subsequent strictures, which are usually located in the posterior portion of the urethra. Such strictures are obstructive, dense and resistant to all forms of therapy. Diversion of urine may be necessary.

c. *Urethritis secondary to an indwelling catheter* left for a long period is another cause of the formation of inflammatory stricture leading to obstruction.

d. *Acquired phimosis* may be traumatic or inflammatory. The elastic fibers of the prepuce are destroyed. Fibrosis occurs, together with abnormal narrowing of the preputial opening and urethral obstruction. Inflammatory causes include balanitis, lack of cleanliness, venereal disease and incontinent dribbling of urine.

c. *Paraphimosis* is a condition in which the glans penis is strangulated by a tightly retracted prepuce, the urethra is compressed and obstruction results. A certain degree of phimosis preexists. Paraphimosis is a common complication of inflammatory urethral disease. Early reduction of the strangulated tissue and treatment of the causative urethral inflammatory disease are advised, both for phimosis and paraphimosis. Division of the constricted area by dorsal slit or circumcision must be considered.

f. *Inflammatory hypertrophy of the verumontanum* so severe that urethral obstruction resulted, has been described by Campbell. This condition has been ascribed to sexual irregularity, with repression, coitus interuptus and chronic masturbation playing major roles. We have not been able to substantiate the cause-and-effect relations with any regularity.

2. *Acquired Traumatic Obstruction:* a. The commonest sequal to urethral trauma is the formation of obstructive strictures. Such strictures are extremely dense, and their openings are irregular in outline. *Internal trauma* may be the result of overzealous instrumentation in an already diseased urethra. Creation of false passages may occur, or penetration of the rectum may result. These complications are often present when urethral pathologic conditions already exist. Instrumental overdistention of the urethral lumen has been responsible for numerous strictures, either at the fossa navicularis or in the bulbomembranous portion of the urethra (Fig. 9). Five per cent of all patients on whom transurethral prostatic resections are performed are said to present such strictures. We have attempted to prevent this by calibrating the urethra preoperatively and gently dilating it to the required instrumental calibre. We cannot overemphasize the importance of using well-lubricated instruments; we always retroject lubricating jelly directly into the urethra prior to instrumentation. Emmett and his colleagues have advocated preliminary internal urethrotomy to prevent strictures occurring after transurethral resection. They so treated 450 patients whose urethral lumens measured less than 26 F at the external meatus and 36 F in the bulbous portion. Emmett and his collaborators estimated that this procedure was needed prior to 22 per cent of all transurethral operations done by them.

b. *Burns of the urethra* are uncommon. Formerly, caustic solutions were used to treat inflammation and as prophylaxis against venereal disease. Silver nitrate, bichloride of mercury and alcohol were the most common agents. The injury was usually aggravated by passage of instruments. Immediate mucosal swelling occurred, followed by mucosal slough, formation of stricture and then obstruction. Idiosyncrasy to intraurethral medications may cause allergic reactions similar to chemical burns. The mercurials are the agents chiefly responsible. Electrical burns may occur owing to faulty insulation of electrodes during resection or cauterization. Strictures resulting from burns are long and extensive. They usually follow the direction of the solution or electric current that caused the reaction and are highly resistant to dilation.

c. *External urethral trauma* usually results in rupture of the urethra, extravasation of urine, suppuration in the fascial planes and formation of stricture. Separation of the symphysis pubis, often associated with fracture of the pubic bones, traumatizes the urethra behind the triangular ligament and may involve the neck of the bladder. Extravasation into the prevesical space and the region of the inner thigh is not uncommon.

Straddle injury of the bulbous portion of the urethra is fairly common and may be followed by extravasation of urine in front of the triangular ligament traveling beneath Colles' fascia and up over the abdomen. Penetrating wounds within the triangular ligament of the membranous portion usually extravasate about the prostate and through the ischiorectal space. Adequate early repair of the ruptured urethra minimizes stricture formation.

3. *Urethral Spasm: Spasmodic strictures of the urethra* have been reported which are neither congenital nor acquired. These obstructions are temporary and may be due to contracture of the deep urethral muscles, particularly the external sphincter, and to edema of the neck of the bladder. In our experience this condition is usually of psychic origin. Spasm may occur on the basis of irritation from a foreign body, inflammation, rapid or forceful instrumentation, intercourse, masturbation, and alcoholic or physical overindulgence. Overheating and chilling may be causative factors. Fiedler reported having observed this condition in association with pneumonia, cerebral accident, cardiac decompensation and unrelated surgical procedures. In his opinion it is commonly associated with rectal distress. The differential diagnosis is difficult when true organic stricture is present. Urethrographically a smooth constricted area is demonstrable. Treatment consists of local anesthesia, heat, antispasmodics, gentle pressure and reassurance.

4. *Urethral Tumors*: Granulomatous urethral lesions, associated with inflammation or trauma, are more prevalent than true urethral tumors. Growths are commonly associated with strictures. The greatest incidence of urethral tumor is reached in the sixth decade of life. Benign urethral tumors (papillomata and polyps) commonly occur in the posterior portion and are usually near the verumontanum. Local excision is the treatment of choice.

The anterior portion of the urethra is the common site of malignant urethral tumors. The majority occur in the bulbous portion (Fig. 10), although the fossa navicularis is another common site. The onset is insidious and may be associated with perineal swelling, priapism, infection, ulceration and progressive obstruction. Regional adenopathy is not uncommon. Tumors of the bulbous portion often involve deep, inaccessible pelvic nodes, but tumors of the fossa navicularis usually spread to the more accessible inguinal glands. Unfortunately, metastases usually occur before the diagnosis is made. Complete removal of the growth is the best therapy. Radical dissection of the involved nodes is governed by the extent of the spread as well as the site of the growth.

5. *Foreign Bodies:* The urethra is an easily accessible portal of entry for many obstructive foreign bodies. Thermometers, bits of paper and wood, chewing gum, candles and thread are but a few of the objects that have been reported. Usually these foreign bodies have been inserted by children, senile persons, sexual perverts, intoxicated persons and the mentally disturbed. Iatrogenically introduced foreign bodies result from broken instruments, such as bits of resectoscope sheaths, endoscopic forceps and torn pieces of catheters. The obstructive symptoms are dependent upon the size of the foreign body and the duration of its presence. The formation of stone about a foreign body is not uncommon. The diagnosis is readily made by palpation and by urethroscopic

and roentgenographic examination. The treatment is removal of the object in the least traumatic way possible, preferably by a closed method.

6. *Urethral Calculi:* These commonly occur behind strictures, especially in the narrow membranous portion of the urethra. The next most frequent site is at the narrowed edge of the fossa navicularis. The calculi are usually solitary and small. Primary urethral stones may arise from the prostate, about a foreign body, or may form proximal to a stricture. They are soft, small and often nonopaque. The usually associated stricture prevents adequate direct visualization of these objects. They are best located with a sound or by urethral palpation. The use of nonopaque air contrast urethrographic procedures is suggested. The symptoms are usually of long duration, and the calculi grow slowly until they progress to the point of urethral obstruction. Secondary urethral stones descending from the upper portion of the tract are more common (11:1). They are usually radiopaque and are easily located on roentgen examination. The anterior portion of the urethra is usually normal in these cases. Symptoms include perineal or penile pain and hematuria, followed by sudden stoppage of urine. The stone may be palpable. Treatment consists of removing the stone transurethrally, if it is small. An open operation is often necessary to remove large and impacted stones.

7. *Prostatic Abscess:* This is not a common lesion. It is characterized by painful urination, chills and fever, perineal pain and a sense of perineal fullness. Urinary obstruction is often reported. Rectal palpation usually reveals an enlarged, warm, tender, asymmetric gland, which may be fluctuant. Incision and drainage are advised.

8. *The Enlarged Prostate:* Enlargement of the prostate is a common cause of urethral obstruction in elderly patients. Much has been written about this condition. Briefly, symptoms of progressive obstruction develop for some time. Rectal palpation and urethrocystoscopic study confirm the diagnosis. Urethrographic examination usually reveals a urethra elongated in its posterior portion. In a patient with purely median lobe hypertrophy there is a forward tilt of the prostatic portion. In patients with hypertrophy of the lateral lobe there is increase in the anteroposterior urethral diameter, with side-to-side flattening. We attempt to reconstruct the vesical neck after open prostatic enucleation, thus hoping to avoid postoperative obstructive narrowing. Prostatic malignant lesions must also be mentioned, primarily the sarcomas; these cause pronounced urethral obstruction.

COMMENT AND SUMMARY

A brief review of the commoner causes of urethral obstruction is presented, emphasizing congenital phimosis, stenosis of the external urinary meatus, valve of the posterior urethra, and contracture of the vesical neck. Acquired inflammatory and traumatic strictures are considered, as well as foreign bodies, calculi and tumors. Basically, treatment is aimed at promoting an adequate flow of urine by removal of the lesion or urethral dilation. The history, embryonic background and anatomic aspects of the urethra are considered.

In the authors' review of 98 recent cases of urethral obstruction, 50 examples of congenital meatal stenosis in infants were included. In 3 of these the condition was associated with hypospadias. Contracture of the neck of the bladder was noted in 11 patients (7 children and 4 adults). Thirty-four urethral strictures were observed in adults (11 anterior and 23 posterior). Obstructive urethral tumors were present in 3 patients. It is obvious

Common Types of Urethral Obstruction

A—*Congenital*
  - Absence of urethra
  - Imperforation of urethra
  - Cyst of external urinary meatus
  - Phimosis
  - Stenosis of external urinary meatus
  - Stenosis of urethral canal
  - Valves of posterior urethra
  - Hypertrophy of verumontanum
  - Obstruction of vesical neck

B—*Acquired*
  - I. Inflammatory
    - Strictures:
      - Gonorrheal
      - Non-specific disease
      - Tuberculosis
      - Indwelling catheter
    - Phimosis
    - Paraphimosis
    - Hypertrophy of verumontanum
  - II. Traumatic
    - Internal
      - Instrumentation
      - Burns
      - Allergies
    - External
  - III. Spasm
  - IV. Tumor
  - V. Foreign body
  - VI. Calculi
  - VII. Prostatic abscess
  - VIII. Prostatic hypertrophy

from these figures that congenital meatal stenosis in infants is quite common. The authors encourage their colleagues in other fields than urology, primarily pediatricians and general practitioners, to be aware of the signs and significance of this condition; this may account for the large number of such cases in their series. Their technic of meatotomy is detailed, and a newly designed set of urethral meatal dilators is described. There is also a surprisingly large number of posterior urethral strictures in this list, which may be due to an overlapping error in classification of bulbomembranous strictures. The most prominent causative factors were instrumentation and postgonorrheal urethritis.

The need of early recognition of these obstructive lesions is emphasized. Prompt, adequate treatment must be given to prevent irreversible damage to the upper part of the urinary tract.

ZUSAMMENFASSUNG

Es wird ein kurzer Überblick über die häufigeren Ursachen der Undurchgängigkeit der Harnröhre gegeben. Hervorgehoben werden die kongenitale Phimose, die Verengung der äusseren Harnröhrenöffnung, die Klappe der hinteren Harnröhre und die Verengerung des Blasenhalses.

Weitere Erwähnung finden entzündliche und traumatische Strikturen, Fremdkörper, Harnsteine und Geschwülste. Die Behandlung hat grundsätzlich die Schaffung eines ausreichenden Harnabflusses durch Entfernung des Hindernisses oder durch Erweiterung der Harnröhre zum Ziel. Auf die Geschichte dieses Krankheitszustandes, die embryologischen Hintergründe und die anatomischen Verhältnisse der Harnröhre wird eingegangen.

Unter den von den Verfassern nachuntersuchten 98 neuen Fällen von Harnröhrenverstopfung befinden sich 50 Beispiele angeborener Verengerung der Harnröhrenöffnung bei Kleinkindern. In drei Fällen war die Erkrankung mit Hypospadie vergesellschaftet. Verengung des Blasenhalses wurde bei 11 Kranken (7 Kindern und 4 Erwachsenen) beobachtet. Verstopfende Geschwülste der Harnröhre bestanden bei der Kranken. Aus diesen Zahlen geht hervor, dass die angeborene Stenose der Harnröhrenöffnung bei Kleinkindern ziemlich häufig ist. Die Verfasser fordern die Ärzte, die keine Urologen sind, besonders Kinderärzte und Allgemeinpraktiker auf, die Symptome und die Wichtigkeit dieser Erkrankung im Auge zu behalten. Die von den Verfassern angegebene Technik der Operation der Harnleiteröffnung ist genau ausgearbeitet, und eine neu entworfene Serie von Erweiterungsinstrumenten für die Harnröhrenöffnung wird beschrieben. Das Kranken-

material der Verfasser enthält auch eine erstaunlich grosse Anzahl von Strikturen der hinteren Harnröhre, was vielleicht auf eine Überschneidung mit bulbomembranösen Strikturen durch irrtümliche Klassifizierung zurückzuführen ist. Die hervorragenden ursächlichen Faktoren bestanden in instrumenteller Behandlung und in postgonorrhoischer Harnröhrenentzündung.

Die Notwendigkeit frühzeitiger Erkennung dieser obstruierenden Erkrankungen wird hervorgehoben. Zur Vorbeugung irreversibler Schädigungen der oberen Harnwege muss sofortige und ausreichende Behandlung erfolgen.

RÉSUMÉ

Une brève revue des cause les plus courantes de l'obstruction uréthrale est présentée. Les auteurs insistent sur le phimosis congénital, la sténose du méat urinaire externe, la valve de l'urèthre postérieur et la contracture du col vésical.

Les rétrécissements acquis inflammatoires et traumatiques sont assimilés aux corps étrangers, aux calculs et aux tumeurs. La base fondamentale du traitement consiste à créer un écoulement urinaire suffisant par l'extirpation de la lésion ou par la dilatation uréthrale. L'historique, le tableau embryonnaire et les aspects anatomiques de l'urèthre sont analysés.

La série étudiée par les auteurs—98 cas récents d'obstruction uréthrale—comprend 50 exemples de sténose congénitale du méat dans la première enfance; 3 de ces cas présentaient un hypospadias associé. Une contracture du col de la vessie a été constatée chez 11 malades (7 enfants et 4 adultes), et dans 3 cas des tumeurs de l'urèthre. Il ressort de ces chiffres que la sténose congénitale du méat est très courante dans la première enfance. Les auteurs encouragent leurs collègues spécialisés dans d'autres domaines que celui de l'urologie—particulièrement la pédiatrie et la médicine interne—à tenir compte de cet état dans leurs examens. Leur technique de méatotomie est exposée et s'accompagne de la description d'un nouveau jeu de dilatateurs pour le méat urinaire.—Cette série de cas comprend également un nombre étonnemment élevé de rétrécissements postérieurs de l'urètre, qui pourraient être dû à un chevauchement d'erreurs dans la classification des rétrécissements bulbomembraneux. Les facteurs responsables les plus importants sont l'uréthrite instrumentale et postgonorrhéique.

RIASSUNTO

Viene fatto un elenco delle cause più frequenti di ostruzione dell'uretra, con particolare riguardo alla fimosi congenita, alla stenosi del meato urinario, alla valvola dell'uretra posteriore e alla contrattura del collo vescicale.

Vengono prese pure in considerazione le stenosi traumatiche, i corpi estranei, i calcoli e i tumori. Sostanzialmente la cura viene diretta versol l'asportazione dell'ostacolo e il ripristino di un normale flusso urinario. Viene trattata, inoltre, la storia, l'embriogenesi e l'anatomia dell'uretra.

In una rassegna di 98 casi di ostruzione dell'uretra, sono incluse 50 stenosi congenite del meato nell'infanzia; in 3 di questi malati vi era anche un'ipospadia, in 11 (7 bambini e 4 adulti) una contrattura del collo vescicale, in 3 vi erano tumori ostruenti dell'uretra. Da questi dati resulta che le stenosi meatali congenite sono abbastanza frequenti nei bambini. L'autore raccomanda ai colleghi, e soprattutto ai pediatri e ai medici generici, di far attenzione ai segni e al significato di questa affezione. Egli descrive la technica della meatotomia e l'impiego di un nuovo apparecchio dilatatore dell'uretra. Nell'elenco vi è anche un cospicuo numero di stenosi dell'uretra posteriore la cui causa princi-

pale è l'impiego di strumenti e l'uretrite gonococcica.

Queste lesioni debbono essere riconosciute precocemente e trattate adeguatamente per prevenire lesioni irreversibile delle vie urinarie prossimali.

SUMARIO

Apresenta uma revisão das causas mais comuns da obstrução uretral, salientando a fimose congenita, a estenose do meato urinario, valvula da uretra posterior e contratura do colo vesical.

Cita as estenoses inflamatorias e traumaticas, corpos extranhos, calculos e tumores. Descreve os objetivos do tratamento fundamental e os aspectos embiologico, anatomico da uretra.

O A. teve 98 casos recentes de obstrução uretral, inluindo 50 casos de estenose meato de origem congenita, sendo 3 associados com hipospádia. Contratura do colo vesical em 11 casos e obstrução tumoral em 3 pacientes. O A. salienta os pediatras e clinicos a verdadeira significação e sintomatologia dessa afecção. Descreve a técnica da meatotomia e apresenta um novo tipo de dilatador. Diz que há um número imenso de estreitamento uretrais posteriores nesta lista devidos a um erro de classificação dos estreitamentos bulbomembranosos. Como causas etiologicas cita a instrumentação e a uretrite gonococcica.

Descreve cinco casos de paralisia cerebral complicada por epilepsia ou defeitos mentais. As idades variaram entre 9 mêses e meio e 7 anos e meio. Todos foram necropsiados e os 4 casos mencionados de angioma foram observados. Biopsias dos regiões frontal, parietal, occiptal e cerebelar sem evidencia de porencefalia. Essasobservações, na opinião do A., podem causar modificações encefalicas devidas aos angiomas, possivelmente, de carater reversivel: a excisão do tecido doente durante a operação concedeu uma oportunidade de recuperação á criança. Nos sobreviventes registraram-se melhorias sob determinados aspectos.

RESUMEN

Se trata de una breve revisión de las causas más frecuentes de obstrucción ureteral con especial mención de la fimosis congénita, la estenosis del meato urinario externo, la válvula de la uretra posterión y la contractura del cuello vesical.

También se estudian las estrecheces traumáticas e inflamatorias así como los cuerpos extraños, los cálculos y los tumores. Esencialmente el tratamiento tiende a buscar una salida fácil de la orina por la extirpación del obstáculo o por la dilatación. Se estudian especialmente la historia, el desarrollo embrionario y la anatomía patológica.

En una revisión de 98 casos recientes de obstrucción uretral hecha por el autor hay que incluir 50 de estenosis congénita del meato en niños, en tres de los cuales existí también hipospadias. En once enfermos (7 niños y 4 adultos) se trataba de contractura del cuello vesical. En tres enfermos la obstrucción se debía a tumor. Estas cifras dan evidencia de que la estenosis del meato es la causa más frecuente de obstrucción ureteral en los niños. Los autores llaman la atención de sus colegas de campos distintos a la urología, pediátras y médicos generales para que estén atentos a la presencia de la estrechez del meato. Describen a continuación su técnica operatoria y presentan una nueva serie de dilatadores ureterales de su invención. En esta estadística se estudia también un número considerablemente importante de estrecheces ureterales posteriores. Sus causas más frecuentes son traumas instrumentales y uretritis postgonocócica.

Se llama la atención sobre la importan-

cia del diagnóstico precoz en tales lesiones obstructivas. El tratamiento debe ser precoz para prevenir lesiones irreversibles del tracto urinario superior.

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Obesity is a factor in the production of high blood-pressure: so when the doctor reduces the fat man's weight, he usually sees his blood-pressure fall. It has been estimated that every pound of fat requires six tenths of a mile of blood-vessels. A man who is twenty pounds overweight is carrying round twelve miles of excess blood-vessels. No wonder his heart is strained!

— *Major*

Lavage of the Endometrial Cavity as an Aid in the Diagnosis of Carcinoma of the Uterine Corpus

A Progress Report*

DANIEL G. MORTON, M.D., D.A.B., JERRY G. MOORE, M.D., D.A.B.,
AND NORMAN CHANG
LOS ANGELES, CALIFORNIA

THIS report represents an extension of efforts begun in 1954 and described in 1957[1] on the subject of lavage of the endometrial cavity as an aid in the diagnosis of endometrial carcinoma. There has been great need for a more reliable office test than the vaginal smear when the possibility of corpus carcinoma existed. Since the reliability of the vaginal smear method in diagnosing carcinoma of the endometrium has been only 40 to 50 per cent, whereas for cervical carcinoma it has been 85 to 90 per cent, it was concluded that the difference might lie in less representative material in the former instance. The purpose of our studies was to develop and evaluate a method for obtaining better specimens from the uterine cavity for cytologic study than were provided by the ordinary vaginal smear.

Our approach involved *lavage* of the endometrial cavity with 2 to 4 cc. of sterile physiologic solution of sodium chloride, collection and centrifugation of this solution after it flowed back into the vagina and subsequent smearing and staining of the residue for cytologic study. Dilute hydrochloric acid was used before staining to hemolyze red cells when the specimen was bloody. The method was described in detail in our original article and will not be repeated here. Our preliminary results showed that carcinoma of the upper part of the tract was indicated by this test in 92.3 per cent of the cases in which it actually existed. With similar purpose in mind, Hect[2] and Reagen and Sommerville[3] have reported the use of *aspiration* of the endometrial cavity as a means of obtaining more representative material for cytologic study, and both have obtained excellent results also.

Our material is presented in Table 1. Although we have obtained lavage specimens from 1,265 unselected patients (through October 1957), we shall confine our attention here to the 398 patients in whose cases histologic confirmation was provided by curettage and/or hysterectomy. In this group there were 46 carcinomas of the upper part of the genital tract; 44 were endometrial adenocarcinomas, 1 was a sarcoma

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From the Department of Obstetrics and Gynecology, University of California, Los Angeles.

*Aided by grants from the Cancer Research Coordinating Committee of the University of California and from the American Cancer Society.

Submitted for publication April 28, 1958.

Recognizing the need of a reliable office test for carcinoma of the uterine fundus, the authors have resorted to cytologic examination of a lavage specimen from the uterus, with good results. Positive results were obtained in approximately 90 per cent of the cases in which malignant disease was actually present. A fair number of false positive results are encountered. The possible reasons for these errors are analyzed. It is pointed out that a considerable amount of experience in reading endometrial smears is requisite to the best possible results. Fortunately, the authors add, a false positive diagnosis involves no serious consequences, meaning only that a curettage may be performed that later proves to have been unnecessary, and this at least is an error on the side of caution. Conversely, the test, once brought to perfection, would eliminate the need of curettage in many cases.

and 2 were ovarian adenocarcinoma. Cytologic examination of the lavage specimen led to the correct suspicion of carcinoma in 40 of the 46 cases, or 87 per cent. Carcinoma cells were not detected (or correctly interpreted) in 6 of the 46 cases. This degree of proficiency approaches closely that obtained with ordinary vaginal smears in the diagnosis of cervical carcinoma (Table 2).

We have restudied our material carefully to see whether the reason for failure in the 6 cases could be discovered. Actually, in the case of one of the 6 patients, the result was classified as a "false negative" on the basis of an original normal lavage specimen in a 44-year-old woman complaining of menometrorrhagia, although a correct positive result was obtained two months later when the patient returned with a recurrence of symptoms. This result might have been classified as a "correct positive" with considerable justification. This would have raised the percentage of correct positive reactions to 90. In another of the 6 cases, a second lavage specimen revealed a correct positive result, whereas the initial specimen showed no carcinoma. In this instance we were looking for the positive results since a correct histologic diagnosis had been made in the interval; it cannot be considered diagnostically significant.

TABLE 1.

Total number of patients investigated	1265
Total number of patients investigated with histological confirmation	398

TABLE 2.—*Results in the 398 Cases Verified Histologically*

Carcinoma of the upper part of the genital tract	46
Suspected on basis of lavage	40
Missed on lavage	6
Per cent correct	87

(As of Nov. 1, 1957)

TABLE 3.—*False Positive Results in the 398 Histologically Verified Cases*

	False Positive	*Squamous Ca + Endometrial Ca —*	*HE*
Original interpretation	19		
Reevaluation	7	2	10

(As of Nov. 1, 1957)

We were not able to explain the false negative results in the other 4 cases. It did not appear that we had failed to recognize suspicious or frankly malignant cells, but rather that the lavage had failed to produce such cells, although there seemed to be adequate numbers of cells for study

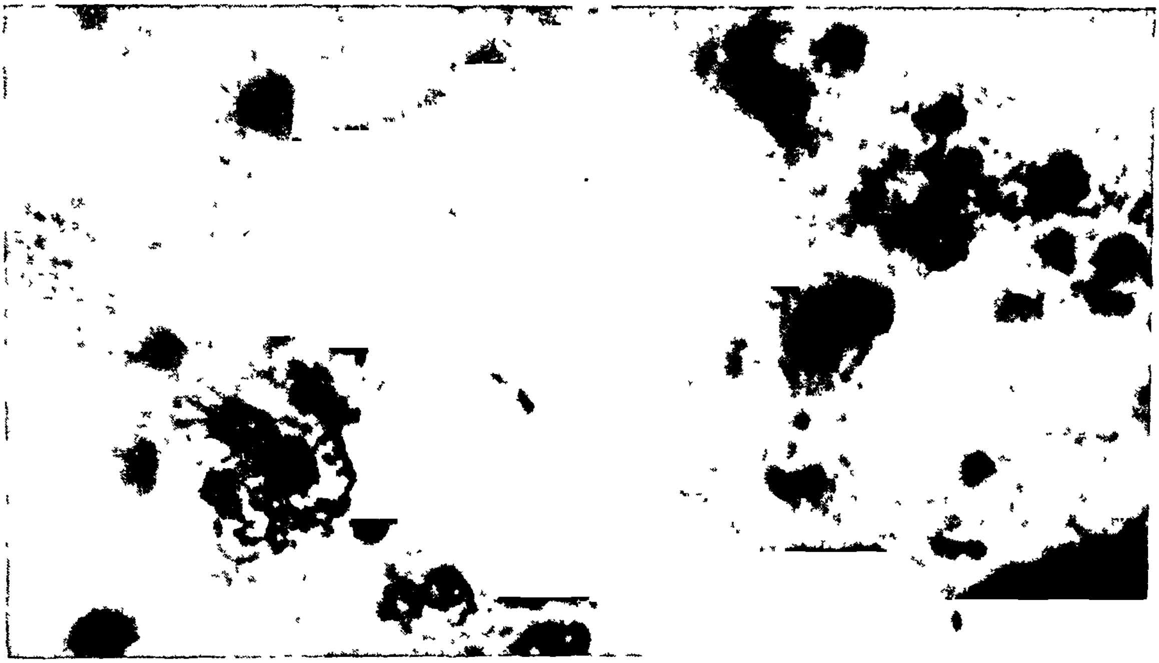

Fig. 1.—Clumping of cells in lavage specimen, with hyperchromatic nuclei resulting from superimposition (see text).

in 5 of the 6 cases. The possibility must be considered that in some 10 to 15 per cent of cases the technic itself cannot be relied upon to carry malignant cells down into the vagina. This point will have to be settled by further investigation.

Table 3 shows our false positive results. In our original interpretation there were 19 such results. From a practical standpoint, it would not matter so much if a significant proportion were called "suspicious" or "positive" erroneously—it would only mean that the women concerned would be subjected to a curettage that later would prove to have been unnecessary. In searching for explanations of these mistakes, however, our false positive results were carefully restudied. Subsequent columns in Table 3 show that upon reevaluation there were only 7 false positive results and 2 cases in which the lavage specimen revealed squamous carcinoma cells but gave negative results for endometrial carcinoma. The remaining 10 cases of the original 19 with false positive results were classified as IIR, meaning that they gave no definite evidence of carcinoma cells but showed clumps of cells that could not be interpreted because of crowding; in such instances, we are *now* convinced that no diagnosis can be made and that repeat specimens should be examined.

The chief sources of error leading to false positive diagnoses were (1) clumping of cells, in which event cellular detail usually could not be made out and the nuclei appeared hyperchromatic because of superimposition (Fig. 1); (2) the presence of rather dyskariotic endocervical cells which, we observed, could be much more bizarre than endometrial cells and still remain in the benign (Fig. 2) category; (3) cannibalism, resulting in cells filled with nuclear remnants which obscured the true nucleus of the epithelial cells (Fig. 3),* and (4) the presence of squamous carcinoma

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*This feature was observed in both benign and malignant cells and often obscured the diagnosis.

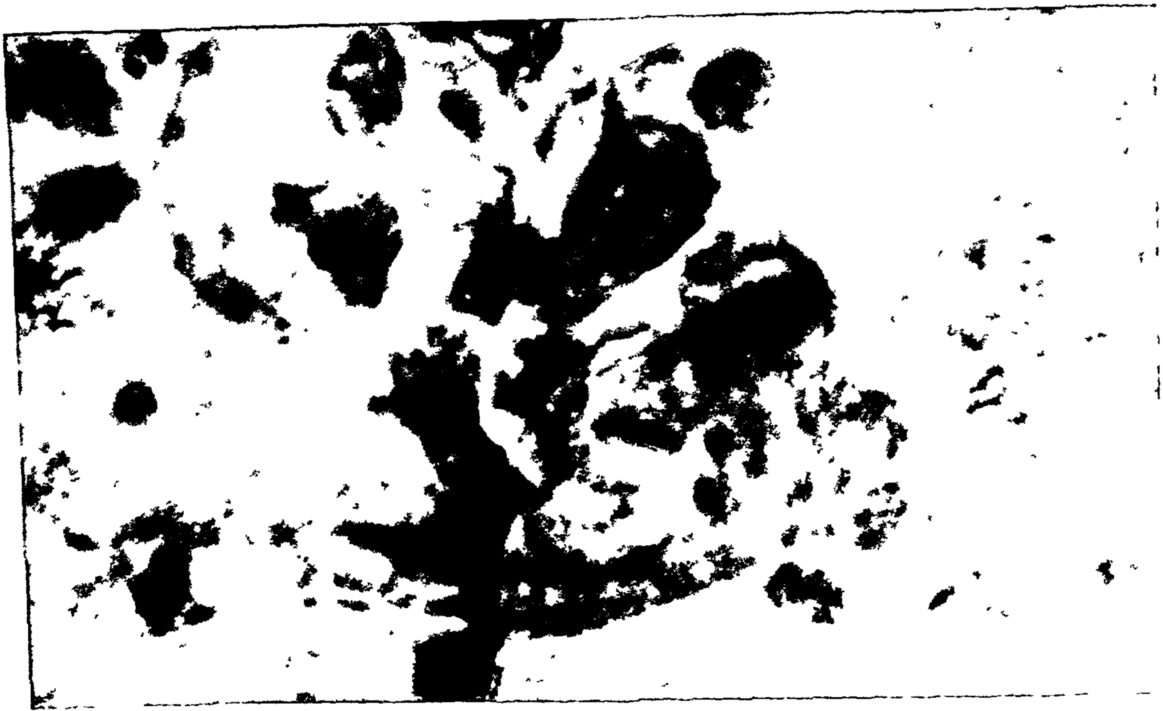


Fig. 2.—Bizarre but benign dyskariotic cells (see text).

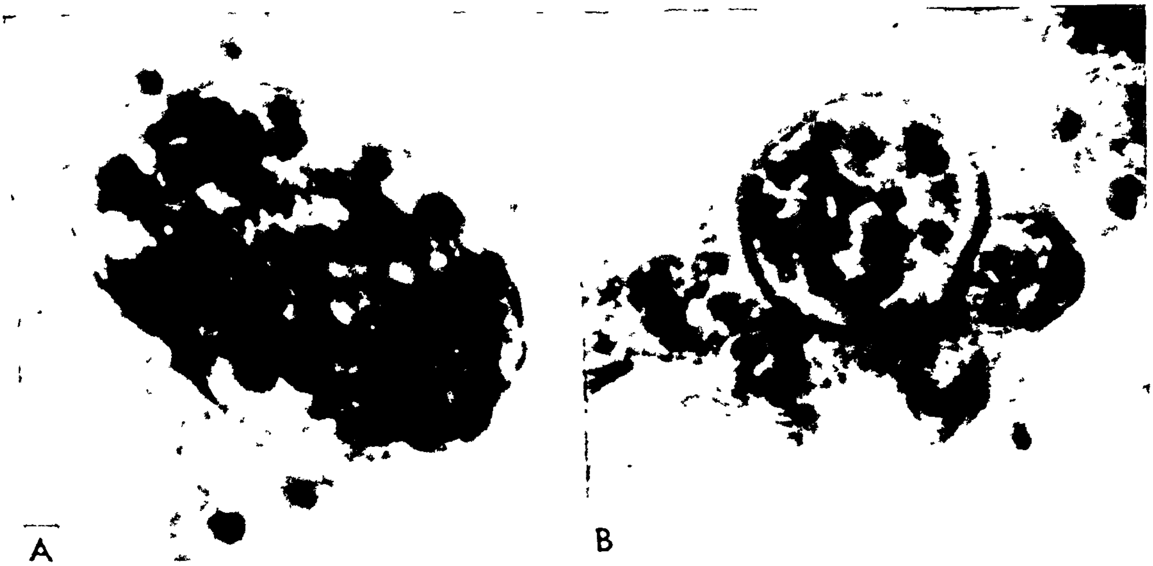
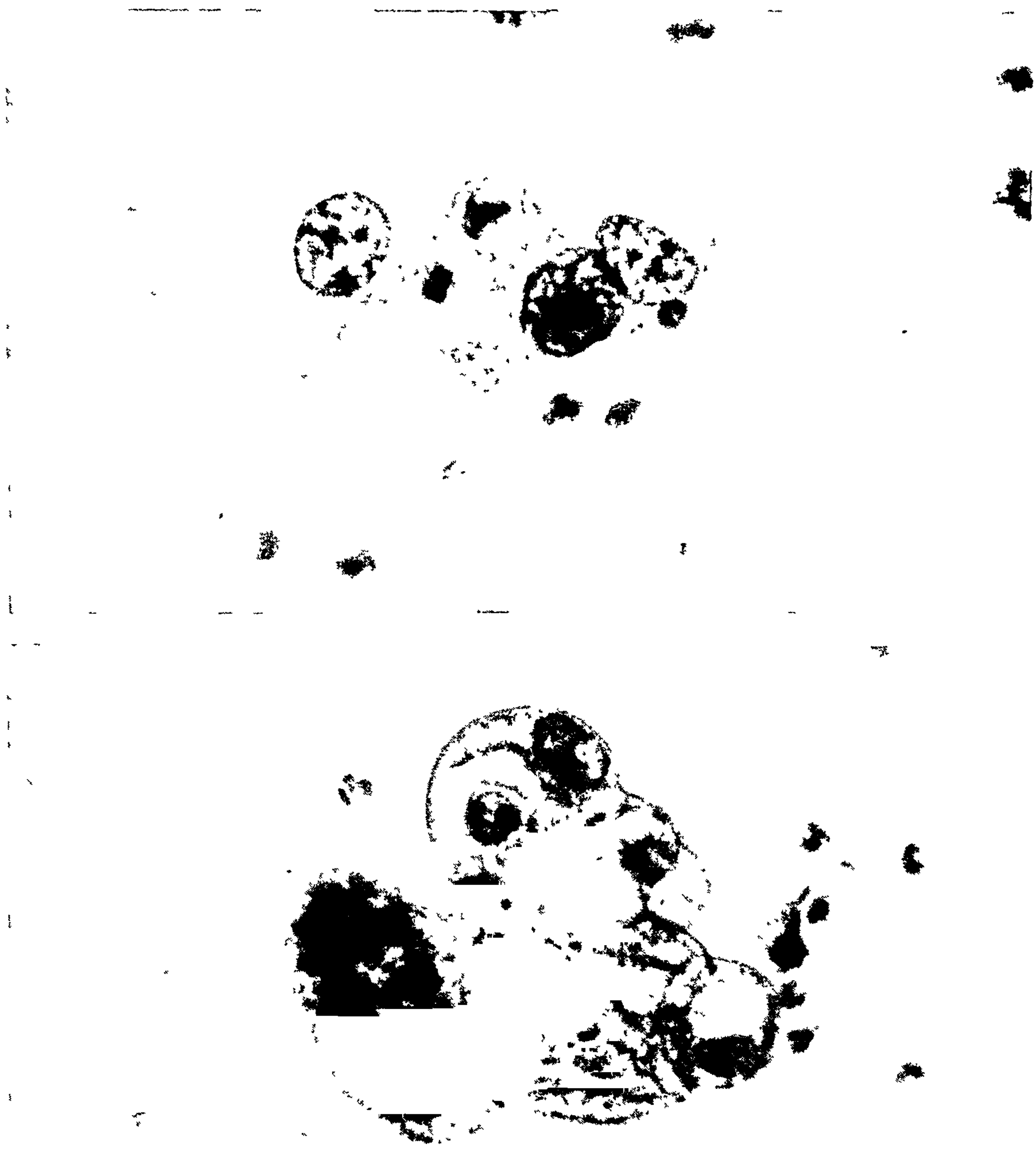


Fig. 3.—Cells filled with nuclear remnants obscuring true nuclei of epithelial cells (see text).

(in 2 cases). It may be that it will never be possible to avoid making false positive diagnoses in a significant number of cases, although, of course, continued study has enabled us to detect our errors much more readily now than in the beginning. As has been pointed out, false positive diagnoses are not serious, since they do not lead to neglect. Figures 4 and 5 show examples of true positive diagnosis, later confirmed histologically.

No complications have been associated



Figs. 4 *(above)* and 5 *(below)*.—Lavage specimens revealing true positive diagnosis, later confirmed histologically.

with the use of the lavage technic. While it is theoretically possible for the solution to traverse the tubes, carrying tumor cells or infection into the peritoneal cavity, thus far there has been no evidence of either. A sterile solution is employed, and only 2 to 4 cc. is injected (under low pressure), depending upon the size of the uterus. On occasion the external cervical os is so small and tight that even a small cannula cannot be introduced. Such a patient can be investigated only in the operating room under anesthesia.

Of special interest are the results in women who complain of bleeding, for it is probably only in these individuals that one would feel called upon to make an investigation of this type. In this respect, the lavage technic differs from the ordinary vaginal smear, which it is logical and wise to employ in all women whether they have symptoms or not. Table 4 depicts the results in the 299 cases with histologic verification in which menorrhagia, metrorrhagia or menopausal and postmenopausal bleeding were the presenting symptoms. As might be expected, the vast majority of the carcinomas of the upper part of the tract occurred in those who complained of bleeding at the time of the menopause or in the postmenopausal years. Thirty-nine of the 45 carcinomas in this group of patients were suspected on the basis of the lavage specimen. Actually there is little need for such a test in the cases of women with frank postmenopausal bleeding for they must be subjected to curettage in any circumstances. Careful study of the histories of the 136 women in our series with menopausal and/or postmenopausal bleeding revealed that in 18 per cent the bleeding had returned after a period of amenorrhea of less than twelve months (usually less than six months) or spotting had been noticed in association with hormone therapy or hypertension, or the patient was in doubt as to whether spotty bleeding had occurred from the vagina, the bladder or the rectum. These women, as well, no doubt, as many of those who have menorrhagia at an earlier age, were probably bleeding for some reason other than the existence of a neoplasm; yet one feels obligated in such cases to perform a curettage in the absence of some additional reassurance, such as a negative result from lavage might afford (Table 5). This is not to suggest that curettage should be replaced, but only that it could sometimes be deferred or even eliminated if there were an office test such as the one described which could be relied upon to indicate normal conditions—or the opposite. Obviously, if bleeding persisted or recurred even in spite of a normal lavage specimen, curettage would be indicated.

Curettage is a minor procedure and should not be avoided if there is any doubt; nowadays, however, hospitalization for even such a minor operation involves a considerable amount of disability and economic burden.

TABLE 4—*Results in 299 Cases Verified Histologically in which Menorrhagia, Metrorrhagia or Postmenopausal Bleeding Was the Presenting Symptom—(Omits One Positive Lavage in Patient Without Bleeding)*

	Cases	*Positive Lavage*	*Positive Histology*
Menorrhagia	47	0	1
Metrorrhagia	116	1	1
"Menopausal" and "postmenopausal" bleeding	136	38	43

(As of Nov. 1, 1957)

TABLE 5.—*Justification*

In the puzzling group of 136 cases of "menopausal" and/or "postmenopausal" bleeding, the following were instances in which the bleeding was *not* clearly postmenopausal:

	Cases	*Total Group*	136
Recurrence of bleeding after less than 12 months of amenorrhea	15		
Postmenopausal spotting due to hormones, hypertension, or other causes not clearly vaginal	11		
	26	Per cent	18

(Eighteen per cent might logically have been investigated by lavage.)

dade quando há carcinoma presente. Analisa as posiveis razões dos casos de testes duvidosos. Uma grande experiencia do citologista é necessaria para correta leitura das laminas. Felizmente um falso positivo não é muito serio, indican do apenas que algumas poucas mulheres foram submetidas á curetagem. Para confirmação de um teste "positivo" ou pelo menos quando houver dúvida como pode ocorrer quando as hemorragias voltam ou persistam apos um teste "negativo" o tecido endometrial deve ser submetido á histologia depois da curetagem.

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Rembrandt f.

The Anatomy Lesson of Professor Deyman, by Rembrandt. This Rembrandt picture is less well known than the "Anatomy Lesson of Professor Tulp." It shows the cadaver with the abdomen already dissected and the anatomist at work on the brain, which has been exposed. One of the criticisms of Rembrandt has been his designing of the nude, in which it is said that the whole figure was often out of proportion, the hands and feet too large or too small. In spite of the allowance for foreshortening in the present picture, some of these defects may be recognized. (Reproduced by courtesy of the Rijksmuseum, Amsterdam, The Netherlands.)

—*Hamilton Bailey, F.R.C.S. (Eng.), F.A.C.S., F.R.S. (Edin.), F.I.C.S. (Hon.)*

Carbonic Anhydrase Inhibitors: Their Effect on Water and Electrolyte Metabolism in Toxemia of Pregnancy*

JOSÉ FILIPE AFONSO, M.D., AND RUSSEL R. DE ALVAREZ, M.D.
SEATTLE, WASHINGTON

TOXEMIA is a serious complication of pregnancy, resulting from an enigmatic derangement of physiologic mechanisms. Treatment is directed toward returning the patient to a state of metabolic homeostasis, and various means to attain this end are available. Of course, attentive vigilance over the prenatal and puerperal patient, so that any early signs and symptoms of toxemia can be brought under control before the condition becomes advanced, is the best preventive measure against this complication.

Two early warning signs of impending preeclampsia are edema and excessive gain in weight, both of which almost always precede the appearance of proteinuria and hypertension. It seems well established that moderate retention of water and sodium does occur during normal pregnancy and that this retention is greatly augmented in patients in whom toxemia of pregnancy develops.[1] The mechanism responsible for the increased retention of sodium in toxemia of pregnancy remains unknown, but it is the general impression that it may be related to a decrease in glomerular filtration rate, an increase in circulating steroids and an increase in the secretion of antidiuretic substances. There is strong evidence to show that this retention may be mediated through an increase in tabular reabsorption.[2]

The administration of acetazolamide, a carbonic anhydrase inhibitor, increases the urinary excretion of sodium, chloride and potassium. It decreases the excretion of ammonia and the titratable acidity in toxemic patients with excessive extracellular fluid volume. Acetazolamide is an effective natriuretic agent for toxemic pregnant or puerperal patients.

The daily administration of 250 mg. of this agent to patients whose water and electrolyte imbalance has been corrected produces minimal natriuretic and water-diuretic effect but a pronounced kaliuretic effect. This suggests the possibility that continuous administration of the drug to toxemic patients who have no clinical signs of excessive extracellular fluid volume may result in hypokalemia.

Even though no obvious toxic effects were noticed in the mothers or babies with the schedule of dosage used in this study, it would seem desirable to maintain vigilant control over not only the total dose of acetazolamide but the duration of its administration.

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*From the Department of Obstetrics and Gynecology, University of Washington School of Medicine, Seattle 5, Washington.

Read at the Twenty-Third Annual Congress of the United States and Canadian Sections, International College of Surgeons, Los Angeles, March 8-11, [illegible]

Submitted for publication May 7, [illegible]

Since the enzyme carbonic anhydrase deals intimately with the mechanisms involved in the tubular reabsorption of sodium, it would seem logical to evaluate the usefulness of one of its inhibitors in the prophylaxis and treatment of the toxemia of pregnancy. Acetazolamide (Diamox R.) was chosen for this study. This drug is known to inhibit the carbonic anhydrase of the tubular cells, thus causing increased excretion of sodium and potassium. This is accompanied by a decrease in the excretion of ammonia and titratable acidity.[3]

Materials and Methods. — Forty-eight patients with toxemia of pregnancy comprise the study group. These patients were treated during fifty hospitalizations by means of bed rest, a neutral ash salt-free diet, barbiturate sedation, hydration and acetazolamide. On admission, each patient was weighed on a specially designed bedside scale, and the serum sodium, potassium, chloride and carbon dioxide content and the blood urea nitrogen level were determined. Acetazolamide was administered orally in a daily dose of 250 mg. during a first course of three days, discontinued for a three-day rest period, and given again in the same dosage for a second course of three days. Records were kept for each patient on the average daily intake of calories (1,200), sodium (30 mEq. per day), protein (90-100 Gm), neutral ash, and water (3,500-4,000 ml.). The carbon dioxide content was retested in blood drawn under oil after the first course of acetazolamide, after the rest period and after the second course of the drug, by the method of Van Slyke and J. N. Neil.[4] The serum concentrations of sodium, potassium and chloride were determined daily before breakfast for ten days. Twenty-four hour urine collections were obtained daily during the nine-day study period, and from these the total *per diem* excretion of sodium, potassium and chloride was ascertained. Determinations of serum and urinary sodium and potassium were performed with use of a Baird internal flame photometer (Ser. No. DB-2-302). Serum and urine chloride determinations were done by the method of Schales and Schales.[5] Urinary excretion of ammonia was determined as described by Van Slyke and G. E. Cullen,[6] and titratable acidity as described by Hawk, Oser and Summerson.[7] The p_H of the urine was measured with a Beckman p_H meter.

In order to appraise the differences between pregnant and puerperal patients, we shall consider separately an antepartum and a postpartum group, according to the period in which the study was carried out.

The antepartum group consisted of 13 patients and the postpartum group of 37 in 23 of whose cases the diagnosis was made before delivery and in 14 during the puerperium.

TABLE 1.—*Water Intake and Urinary Output of Patients with Total Toxemia, Ante Partum and Post Partum: Daily Average*

	Antepartum Group			*Postpartum Group*		
	Intake	*Output*		*Intake*	*Output, Ml.*	
	Daily Mean Value, Ml.	*Daily Mean Value, Ml.*	*Standard Deviation, Ml.*	*Daily Mean Value, Ml.*	*Daily Mean Value, Ml.*	*Standard Deviation, Ml.*
1st course	3,700	3,500	890	3,400	3,100	1,100
Rest period	3,700	2,900	1,300	3,400	2,800	818
2d course	3,800	3,200	1,200	3,100	2,800	848

All data obtained from both groups of patients were analyzed statistically. The "Student t" test was used to appraise the differences between the means. Each of the differences encountered was considered significant if the probability of its occurrence by chance was less than 2 in 100. After final classification of the type of toxemia, which was based upon pregravid, antenatal, puerperal and postpuerperal data, mean levels were obtained for each group. The differences between the mean levels in cases of the various types of toxemia were not evaluated statistically, because of the small number of patients with each type.

Results. — 1. *Urinary Excretion of Water:* Accurate records of the intake and output of each patient were kept throughout the period of study. Daily averages of urinary output and water intake were determined for the first course of acetazolamide therapy, for each day of the first course, for the rest period and for the second course (Table 1).

In order to determine the effect of the drug upon water excretion, the means of daily urinary output during each course of acetazolamide were compared with the mean output of the rest period, the exact values of water intake during each of these periods being taken into consideration. The differences observed were small and had no statistical significance. In the antepartum group the urinary output during the first course of acetazolamide administration was 3,500 ml., while during the rest period it was 2,900 ml. This difference, however, could have occurred by chance, the probability being less than 0.05 but greater than 0.02.

2. *Urinary Excretion of Sodium:* In order to estimate sodium excretion, daily determinations of total urinary sodium (mEq. per twenty-four hours) and sodium concentration (mEq. per liter) were performed in all cases. Daily averages were determined for the first course of acetazolamide (days 1, 2 and 3), for the rest period (days 4, 5 and 6), and for the second course of the drug (days 7, 8 and 9). Mean values for these three periods are shown separately for antepartum and postpartum patients in Table 2. In both groups of patients a marked difference was noticed in sodium excretion, per twenty-four hours and per liter, between the first course of the drug and the rest period. The total amount of sodium excreted in urine was approximately four times greater during the first course of acetazolamide than during the resting interval, and the sodium concentration was three times greater in the first course. The difference between the mean of the first course and the mean of the rest period observed in both groups of patients, expressed either in mEq. per liter or mEq. per twenty-four hours, is statistically significant as evaluated by the "Student t" test ($P<0.001$).

Among the patients treated before parturition, the second course of the drug failed to elicit any increase in sodium excretion (mEq. per twenty-four hours or mEq. per liter) as compared with that of the rest period. The differences between these means are small and not statistically significant ($01<P<0.5$). In patients treated after delivery, the total sodium excretion and sodium concentrations were significantly increased during the second course of treatment as compared with the rest period, the probability of the differences being $P<0.001$.

When comparing the means of total sodium excretion (mEq. per twenty-four hours) of the first course of drug therapy with those of the second course (Table 2), we observed that the amount of this electrolyte excreted during the first course was four times as great in the antepartum group and twice as great in the postpartum group than the amount excreted during the second course of treatment (the difference between these means, $P<0.001$). The differences in excretion of sodium per liter between the two periods were not as great, but they were nevertheless statistically significant ($0.001<P<0.01$).

The amount of sodium excreted per twenty-four hours during the first course of acetazolamide was greater in the antepartum than in the postpartum group, while the converse prevailed during the second course. Similar changes were observed in the concentration of sodium excreted. Although these differences appear to be significant, statistical analysis showed that they could have occurred by chance.

When the values for daily sodium excretion during the first three days of drug therapy were considered, it became apparent that in both groups the greater natriuresis occurred during the first two days.

After final diagnosis of each patient's particular type of toxemia had been made, new mean values were determined for each of the types. Because of the small number of patients with each kind of toxemia, it was not considered fruitful to subject these to statistical analysis. The few degrees of freedom available would require extremely large differences in order to be statistically important.

When sodium excretion for each type of toxemia during the two courses of therapy was compared with that of the rest period, the changes observed were similar to those reported when the patients were grouped under the generic diagnosis of toxemia. The only exception was the group of postpartum patients with benign essential hypertension, in which minimal sodium diuresis was observed. Natriuresis increased during the second course of drug therapy.

The degree of natriuresis observed in antepartum patients during the first course of acetazolamide seemed to be proportionate to the severity of the disease. Patients with severe preeclampsia excreted the greatest amount of sodium; the mildly preeclamptic patients showed slightly less sodium diuresis, and those with benign essential hypertension with superimposed mild preeclampsia still less. Patients with edema only showed a lesser degree of natriuresis. It would thus seem that the degree of response paralleled the degree of electrolyte imbalance present.

3. *Urinary Potassium Excretion:* An increase in total potassium excretion (mEq. per twenty-four hours) was observed in both antepartum and postpartum patients during each course of acetazolamide. The daily mean values for the rest period and for each course of drug therapy are shown in Table 3. In both groups of patients, the differences between potassium excretion during the rest periods and the periods of drug administration were statistically significant ($P<0.001$). This reflected a kaliuretic response to acetazolamide. This increase in potassium excretion was greater during the second course of the drug in the postpartum group, in which the differences between the mean values of two courses was 19.5 mEq. per twenty-four hours ($P<0.001$). In the antepartum group, the difference between the two courses of drug treatment was small (2 mEq. per twenty-four hours) and not statistically significant ($P<0.5$).

In considering the potassium excretion per unit of urine volume (mEq. per liter), it was observed that there was no difference between the values in the first course of acetazolamide and those in the rest period. During the second course the excretion increased by 5.9 mEq. per liter in the antepartum group and 9 mEq. per liter in the postpartum group. These differences were statistically significant, the probabilities being $0.001<P<0.02$ and $P<0.001$, respectively. When the antepartum and the postpartum group were compared, no difference was detected in the excretion of potassium per units of volume (mEq. per liter).

The excretion of potassium per twenty-four hours was greater in the antepartum group during the first course (10 mEq.) and greater in the postpartum group during the second course (11.4 mEq.). The differences had no statistical significance ($0.1<P<0.05$). Estimation of the potassium excretion during each day of the first course of acetazolamide therapy revealed no change in excretion per unit of volume, while an appreciable increase in total excretion of potassium occurred during the second day.

Comparison of the daily mean values for potassium excretion for each type of toxemia revealed the following trends: in the antepartum and postpartum patients the degree of kaliuresis seemed to maintain an inverse proportion to the severity of the disease. This is in contradistinction to sodium excretion, which was directly proportionate to the severity of the toxemia. Patients with edema only had the greatest potassium excretion, patients with essential hypertension and mild preeclampsia had a somewhat lower potassium excretion, and those with severe preeclampsia excreted the smallest amount of urinary potassium in response to acetazolamide.

4. *Urinary Chloride Excretion:* Daily averages of urinary chloride excretions are shown in Table 4. Here again, measurements were made separately for the antepartum and postpartum patients, and the determinations were made for each day of the first course of acetazolamide, for the rest period and for the second course of the drug.

Antepartum Group: The amount of chloride excreted daily during the first course of drug therapy was twice the amount excreted during the rest period and three times the amount excreted during the second course. Chloride concentration rose in a similar manner (for the differences between these means, $P<0.001$). The excretion of chloride per twenty-four hours and per liter during the second course of acetazolamide was less than that of the rest period ($0.001<P<0.01$).

Postpartum Group: In this group, too, the excretion of chloride per twenty-four hours and per liter was greater during the first course of the drug than it was for either the rest period or the second course of treatment. Among these patients, the excretion of chloride during the second course did not differ from that of the rest period. The probability that these differences occurred by chance is significant ($0.001<P<0.01$).

When the antepartum group was compared with the postpartum group, the chloride excretion was greater in the antepartum group during the first course of the drug and in the postpartum group during the second course, but these differences could have occurred by chance, since the probability was greater than 1 in 10.

The mean values for daily chloride excretion, expressed as mEq. per twenty-four hours and as mEq. per liter for each day of the first course of acetazolamide, were evaluated. In both antepartum and postpartum patients the greater chloreusis occurred during the first two days.

Urinary chloride excretions were evaluated for each type of toxemia.

Chloride excretion, like sodium excretion, was proportionate to the severity of the electrolyte imbalance in antepartum patients. The highest values were observed in patients with severe preeclampsia, while patients with mild preeclampsia excreted somewhat less chloride. Those with benign essential hypertension with superimposed mild preeclampsia excreted

TABLE 2.—*Urinary Sodium Excretion: Daily Average*

Period of Treatment	*Number of Patients*	*Sodium Excretion, mEq/24 Hr.*						*Sodium Excretion mEq/1*					
		1st Course		*Rest*		*2d Course*		*1st Course*		*Rest*		*2d Course*	
		Mean Value	*Standard Deviation*	*Mean Value*	*Standard Deviation*	*Mean Value*	*Standard Deviation*	*Mean Value*	*Standard Deviation*	*Mean Value*	*Standard Deviation*	*Mean Value*	*Standard Deviation*
Antepartum	13	137.6	66	30.6	20	36	15	39.3	21.9	11.0	5.4	14.6	10.8
Postpartum	37	89.6	54.9	29.7	23.6	48.2	31.7	28.6	17.9	9.4	6.3	16.6	10.3

TABLE 3.—*Urinary Potassium Excretion: Daily Average*

Period of Treatment	*Number of Patients*	*mEq/24 Hr.*						*mEq/1*					
		1st Course		*Rest*		*2d Course*		*1st Course*		*Rest*		*2d Course*	
		Mean Value	*Standard Deviation*	*Mean Value*	*Standard Deviation*	*Mean Value*	*Standard Deviation*	*Mean Value*	*Standard Deviation*	*Mean Value*	*Standard Deviation*	*Mean Value*	*Standard Deviation*
Antepartum	13	68.3	21.8	46.4	13.7	70.3	21.8	20.5	8.8	18.4	7.8	24.3	11.2
Postpartum	37	58.3	19.5	47.5	17.2	77.8	34.5	21	8.3	17.0	7.1	26.0	11.5

TABLE 4.—*Urinary Chloride Excretion: Daily Average*

Period of Treatment	*Number of Patients*	*mEq/24 Hr.*						*mEq/1*					
		1st Course		*Rest*		*2d Course*		*1st Course*		*Rest*		*2d Course*	
		Mean Value	*Standard Deviation*	*Mean Value*	*Standard Deviation*	*Mean Value*	*Standard Deviation*	*Mean Value*	*Standard Deviation*	*Mean Value*	*Standard Deviation*	*Mean Value*	*Standard Deviation*
Antepartum	13	106.6	48.8	50.8	21.3	33	5.2	30.5	15.5	19.6	8.4	11	5.8
Postpartum	37	69	40.2	46	21	44	29.4	24	12.5	15.9	6.7	14.8	9.1

a still smaller amount, while patients with edema only excreted the smallest amounts.

In the postpartum group, the greatest chloruresis occurred in patients with transitory hypertension.

5. *Urinary Excretion of Ammonia; Titratable Acidity and Urinary p_H:* Urinary excretion of ammonia, titratable acidity and urinary p_H were determined in the cases of 5 patients of the antepartum group and 13 of the postpartum group. Daily averages were obtained separately for each group during each course of drug therapy and in the intervening rest period (Figs. 1 and 2). Ammonia excretion and titratable acidity decreased in both groups during the administration of acetazolamide and increased during the rest period. The decrease in ammonia excretion and titratable acidity during the second course was less marked in the antepartum patients. Inversely, the urinary p_H increased during drug administration and decreased during the rest period. In the antepartum group, the urinary p_H of the third day of the second course equaled that of the first day of the rest period. These changes are in agreement with the reports of other workers.[5]

6. *Serum Electrolytes:* For estimation of the changes in serum sodium, potassium, chloride, and carbon dioxide content produced by the administration of acetazolamide, blood was drawn daily from each patient during the entire period of study. Daily mean values for serum sodium, potassium and chloride concentrations were determined for each three-day course of therapy and for the rest period. To detect further changes in the serum, potassium and chloride balances brought about by the two courses of drug administration and the rest period as well, serum electrolyte concentrations were compared for each patient on the first morning before acetazolamide was begun, on the first and last days of the rest period and on the first day following the second course of treatment. Mean values for the individual differences were determined separately for the antepartum and the postpartum groups. The values obtained are shown in Figure 3, *above.*

The differences between the mean levels of serum sodium, potassium, and chloride concentrations in each period of study were minimal in both groups. Those of the changes that occurred in each period and the differences between them were too small to have any significance.

The serum carbon dioxide content of each patient was determined on admission, after each course of acetazolamide and after the rest period. Mean values for these determinations were obtained for the antepartum and postpartum groups (Fig. 3, *above*). The serum concentrations of carbon dioxide remained essentially unchanged. In the antepartum group the serum carbon dioxide decreased slightly after each course of acetazolamide. In the postpartum group a slight rise followed the first course of the drug.

Our study indicates that administration of acetazolamide to patients with toxemia of pregnancy, in the doses used by us, does not significantly alter the serum electrolyte concentrations.

COMMENT

The pharmacologic aspects of acetazolamide have been studied extensively in animals and in man, and appraisal of its clinical value in many diseases has been reported.[9]

It has been reported that the rapid development of unresponsiveness to repeated use of this agent, even when drug-free intervals are spaced between periods of administration, appears to limit its use-

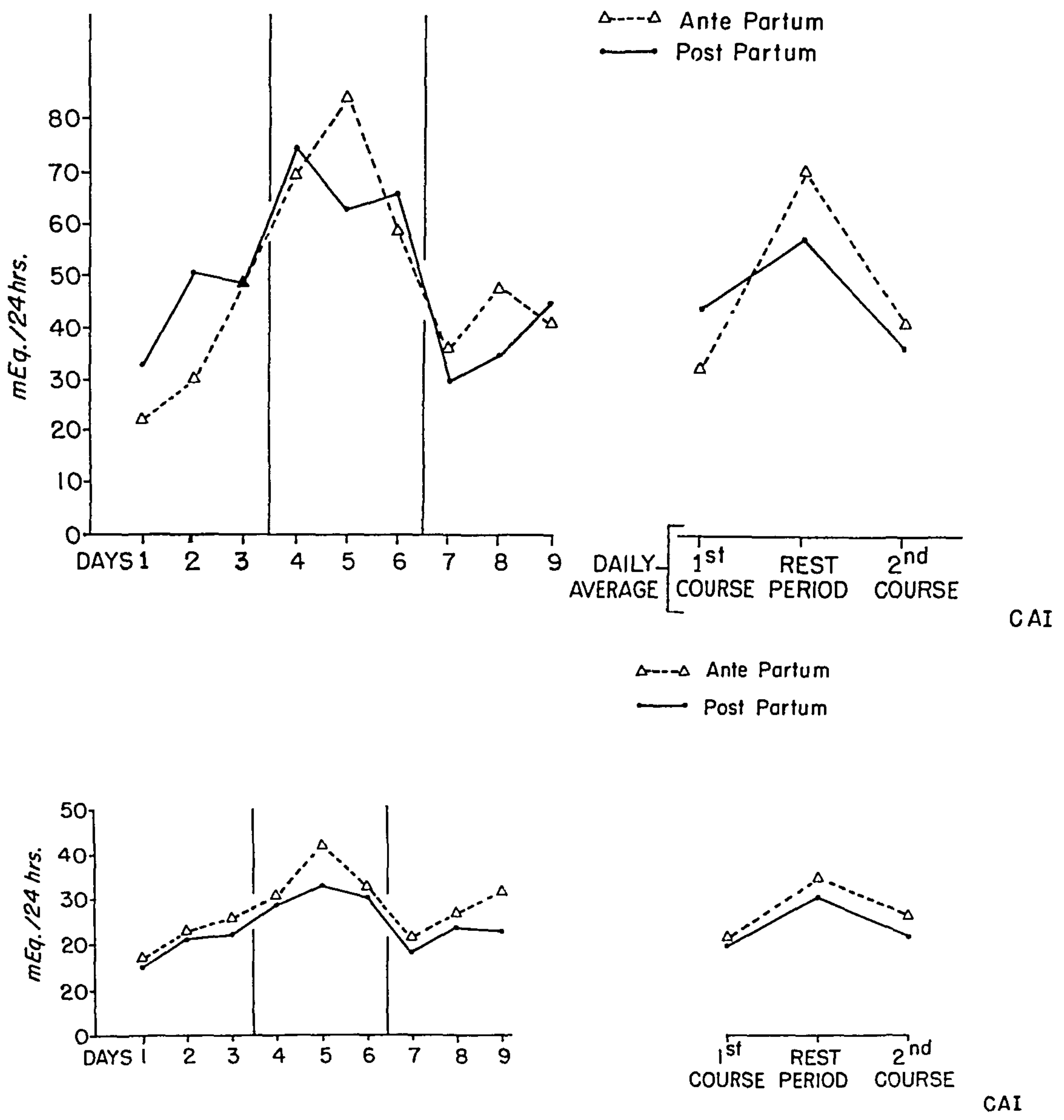

Fig. 1.—Charts showing daily averages of ammonia excretion (*above*) and titratable acidity of urine (*below*).

fulness as a diuretic.[10] This self-limiting action seems to be due to the production of hyperchloremic metabolic acidosis. We observed a certain decrease in the effectiveness of acetazolamide after repeated use of the drug. This was shown during the first course of therapy by a gradual decrease in natriuresis and urinary p_H and a gradual increase of ammonia excretion and titratable acidity. We observed that, contrary to our observations of antepartum patients, there was natriuretic response during the second course of the drug in postpartum patients. This difference was probably due to the increased serum bicarbonate level observed in puerperal patients as a result of the disappearance of the compensated physiologic alkalosis of pregnancy. The changes observed in serum electrolytes were minimal, and neither acidosis nor hyperchloremia was present. The lack of response to acetazolamide was observed as the water and electrolyte imbalances were corrected.

No rebound phenomena followed the use of acetazolamide. The sodium balance, as measured by the sodium intake and urinary sodium output, remained normal during each course of therapy and during the rest period (Fig. 3, *below*).

The excretion of potassium was increased during both courses of acetazolamide administration, but more markedly so during the second course in postpartum patients. This is probably due to the increased endogenous production of potassium during the puerperium, which results in a greater concentration of potassium in the glomerular filtrate. The kaliuretic response was greater during the second course of the drug, when the water and electrolyte imbalance had been corrected; this suggests that hypokalemia could conceivably result from prolonged administration of the drug to patients who did not have excess salt.

It has been shown by other authors that the effect of carbonic anhydrase inhibition upon chloride excretion is variable, increasing or decreasing it slightly or leaving it unchanged. We observed a considerable chloruretic response to acetazolamide during the first three days of therapy in both antepartum and postpartum patients. During the second course of acetazolamide, the chloride excretion decreased in antepartum patients and remained unchanged in those treated during the puerperium.

Increase of water excretion was noted only in antepartum patients, during the first course of the drug, the water diuresis occurring on the second and third days. The electrolyte excretion (total amount excreted) per twenty-four hours and per liter was increased, and was also greater during the first and second days.

The diuretic response was smaller than

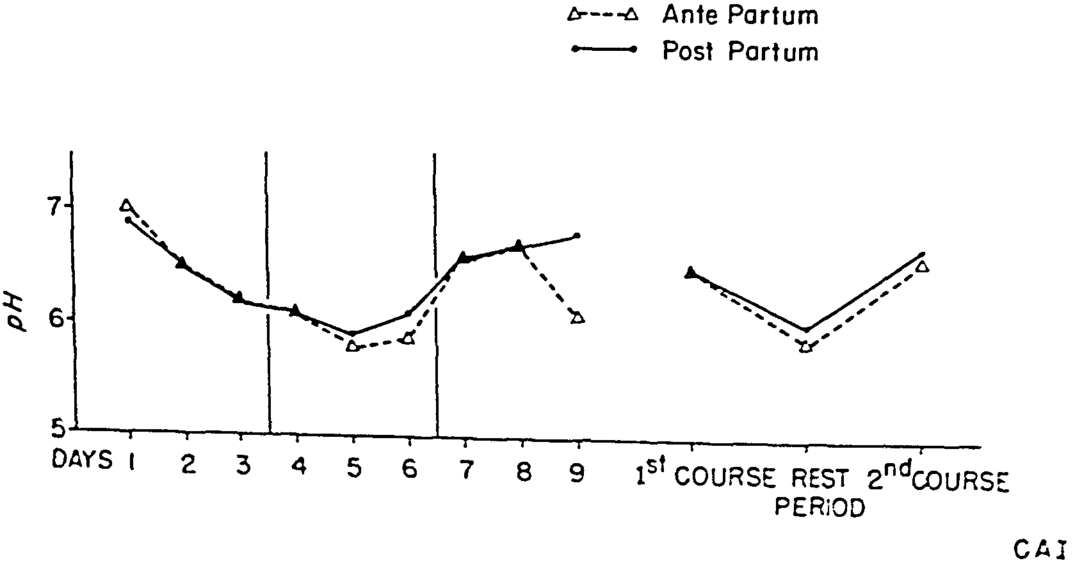

Fig. 2.—Chart showing daily average pH of urine.

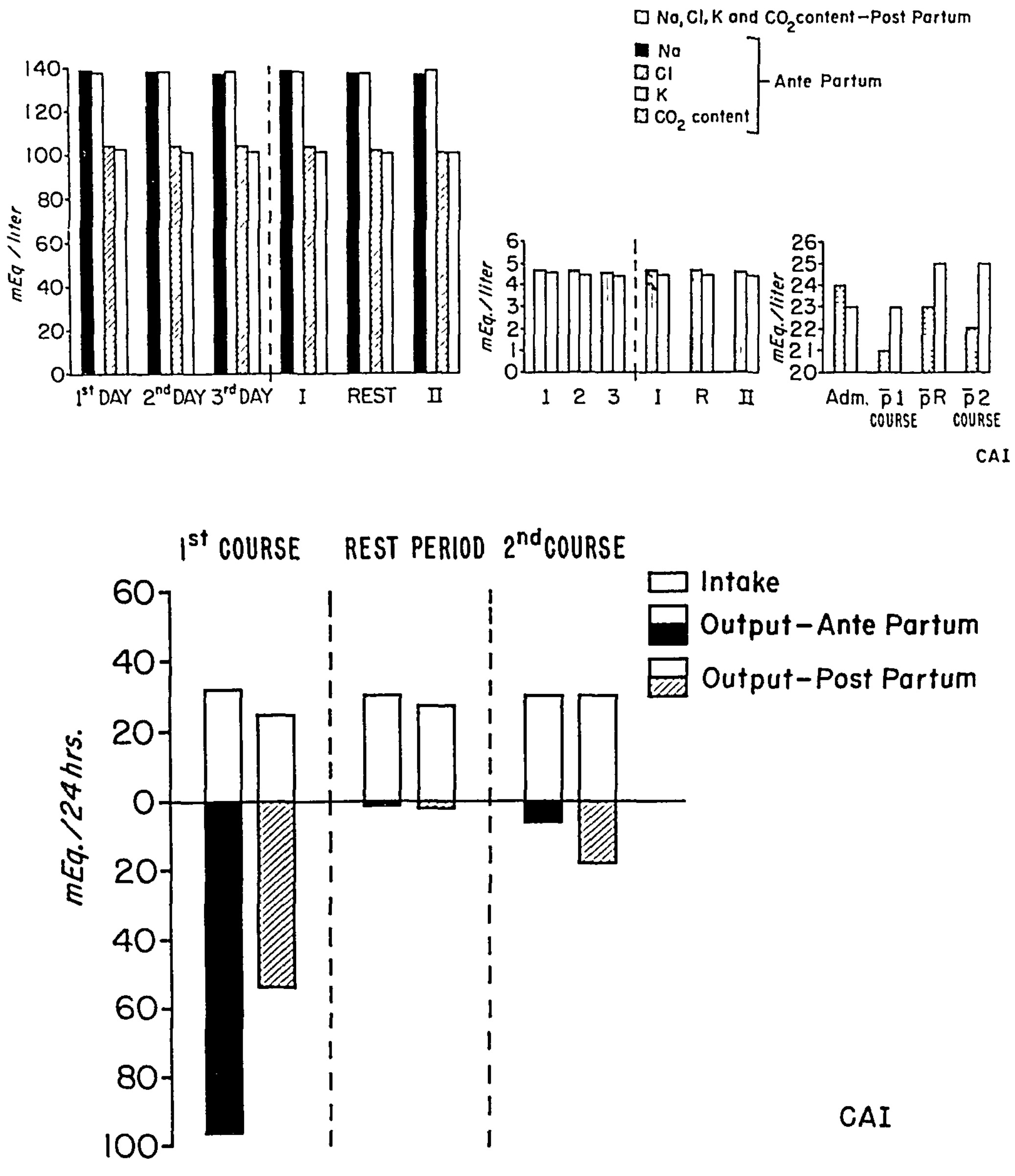

Fig. 3.—Charts showing observations on serum electrolytes (*above*) and sodium balance (*below*).

the lyuretic. We agree with the concept that acetazolamide has a primary effect on the renal excretion of electrolytes but not on the renal excretion of water. Water was excreted as an indirect result of increased electrolyte loss and served to maintain stable osmolarity.

The effect of acetazolamide is dependent to a certain degree upon the concentration of sodium bicarbonate in the glomerular filtrate. Govan has shown that relative metabolic acidosis is present in patients with preeclampsia as a result of increase in phosphates and organic acids, possibly from disturbed carbohydrate metabolism. A slight decrease of serum bicarbonate accompanying the well-known reduced glomerular filtration rate of patients with preeclampsia will result in decreased concentration of sodium bicarbonate in the glomerular filtrate. One would expect, therefore, a poor response to acetazolamide in preeclamptic patients. In this study this was not substantiated, since the best response was observed in such patients and seemed to parallel the presence of excessive extracellular fluid volume and the severity of preeclampsia.

In evaluating the toxic and side effects of acetazolamide, one must know the distribution and role of carbonic anhydrase, an enzyme present in various organs and tissue fluids. The erythrocytes have the highest concentration of carbonic anhydrase of all the tissues in the body. In fetal blood the concentration is much lower. In adults acetazolamide does not significantly alter the erythrocyte concentration of active carbonic anhydrase, but no similar studies have been carried out with newborn infants. In certain doses, acetazolamide administered to dogs[11] and man[12] may interfere with the release of carbon dioxide from the pulmonary capillary blood to the alveoli. This fact is insignificant if the drug is used in therapeutic dosages, but in the human being it does raise the question of possible interference with respiratory exchange between mother and fetus, since the concentration of carbonic anhydrase in fetal blood is much lower.

Even though the role of encephalic carbonic anhydrase is not well known, it is reasonable to wonder whether its inhibition in infants may not produce noxious effects upon the higher centers of the fetus *in utero*. Acute and chronic toxic states caused by the inhibiting action of acetazolamide on carbonic anhydrase have been studied in dogs and rats, and, to a certain extent, in monkeys and in man.[13] Of the various signs of toxicity which have been reported in connection with the drug, the more common ones are drowsiness, paresthesias, and numbness or tingling in the face or the extremities.[14] Drug fever and agranulocytosis have been encountered only rarely.[15] In my patients no side reactions of any sort were noticed, nor were any toxic effects observed in babies, either at birth or during breast feeding, when their mothers had been given acetazolamide.

Summary of Results.—In both the antepartum and postpartum groups of patients with toxemia of pregnancy, a remarkable increase in natriuresis and a smaller increase in chloruresis and kaliuresis was observed during the first course of acetazolamide.

In the antepartum group, the second course of the drug failed to alter the excretion of sodium. The excretion of chloride was decreased, but the potassium excretion was increased. The concentrations of sodium and chloride were increased, while there was no significant change in the concentration of the potassium excreted. In the postpartum group, no change was encountered in chloride excretion, but there was a significant increase in total excretion of sodium and potassium and in the concentration of these ions during the second course of treatment.

In both groups of patients, ammonia excretion, titratable acidity and urinary p_H changed during periods of drug therapy, as has been reported by other workers.

The serum concentrations of sodium, potassium, chloride carbon dioxide remained essentially unchanged during the ten days of study.

In neither group of patients was the excretion of water significantly altered by the administration of acetazolamide.

SCHLUSSFOLGERUNGEN

1. Die Verabreichung von Acetazolanid, einem kohlensauren Anhydrasehemmungsstoff, erhöht die Wasserstoffionenkonzentration des Harns und die Ausscheidung von Natrium, Chlorid and Kalium aus der Blase. Es führt zu einer Harabsetzung der Ammoniakausscheidung und des titrierbaren Säuregehalts bei toxämischen Kranken mit einem Übermass an extrazellulärem Flüssigkeitsvolumen.

2. Acetazolanid ist ein wirksames Mittel zur Anregung der Natriumausscheidung bei toxämischen Schwangeren oder Wöchnerinnen.

3. Bei Kranken, bei denen das gestörte Gleichgewicht des Wasser- und Elektrolytenhaushalts korrigiert worden ist, ruft die Verabreichung einer täglichen Dosis von 250 mg des Mittels nur einen minimalen Einfluss auf die Ausscheidung von Natrium und Wasser hervor; es besteht die Möglichkeit, dass die fortgesetzte Anwendung des Mittels bei toxämischen Kranken, die keine klinischen Zeichen eines übermässigen extrazellulären Flüssigkeitsvolumens aufweisen, zu einem Mangel an Kalium im Blut führt.

4. Obgleich mit der im vorliegenden Studium angewandten Dosis keine offensichtlichen toxischen Wirkungen bei den Müttern oder den Säuglingen beobachtet wurden, erscheint es doch wünschenswert, nicht nur die Gesamtdosis des verabreichten Acetazolanids sondern auch die Dauer der Anwendung des Mittels sorgfältig zu überwachen.

CONCLUSIONS

1. L'administration d'acétazolamide, une anhydrase carbonique inhibitrice, augmente le pH urinaire et l'excrétion de sodium, de chlorure et de potassium par la vessie. Elle diminue l'excrétion d'ammoniaque et l'acidité dosable chez les malades toxémiques présentant un excés de liquide extracellulaire.

2. L'acétazolamide est un agent natriurétique efficace chez les femme encientes et puerperale atteintes de toxémie.

3. L'administration quotidienne de 250 mg de ce produit aux malades dont le déséquilibre des liquides et des électrolytes a été corrigé, produit des effets natriurétiques et aquadiurétiques minimes. Il existe la possibilité que l'administration continue de ce médicament à des malades toxémiques ne présentant pas de signes cliniques d'un excès de liquide extracellulaire provoque de l'hypokalémie.

4. Malgré l'absence d'effets toxiques évidents chez les mères ou les nouveauxnés avec les doses utilisées pour cette étude, il semble indiqué de maintenir un contrôle vigilant non seulement sur la dose totale administrée mais aussi sur la durée du traitement.

CONCLUSIONI

1. La somministrazione di acetazolamide, aumenta il pH urinario e l'eliminazione di sodio, cloro e potassio; diminuisce l'eliminazione di ammonio e abbassa l'acidità titolabile nei malati tossiemici con un volume eccessivo di liquido extracellulare.

2. L'acetazolamide ha una spiccata efficacia sull'eliminazione del sodio nelle tossiemie gravidiche o nel puerperio.

3. La somministrazione giornaliera di 250 mg di questo farmaco a pazienti in cui lo sbilancio idroelettrolitico sia già stato corretto ha un effetto minimo sull'eliminazione del sodio e dell'acqua.

4. Benchè non si sia mai avuto alcun effetto spiacevole nè sulle gravide nè sui neonati, tuttavia anche alle dosi consigliate è opportuno sorvegliare attentamente il dosaggio e la durata di somministrazione del farmaco.

CONCLUSIONES

1. La administración de acetazolamida, un inhibidor de la anhidrasa carbónica, aumenta el pH de la orina y la excreción de cloro, sodio y potasio. Así mismo disminuye la excreción del amoníaco y la acidez intratable de los enfermos toxémicos con excesivo volumen líquido extracelular.

2. La acetazolamida es un evidente eliminador del sodio en la toxemia del embarazo y en puerperio.

3. La administración diaria de 250 mg. de este producto a enfermos cuyo balance de agua y electrolitos alterado ha sido corregido, produce un efecto mínimo sodiodiurético e hidrodiurético, lo que hace posible que la dosis continuada de la droga en enfermos toxémicos sin signos clínicos con excesivo líquido intracelular conduzca a la hipokalemia.

4. Aun cuando con las dosis citadas en este trabajo no se han producido efectos tóxicos en niños o madre, es conveniente mantener un control vigilante no solo sobre la dosis total sino a lo largo de todo el tiempo de administración.

CONCLUSOES

1. A administração de acetazolamide, um inhibidor de anhidrase carbonica, aumenta o Ph urinario e a excreção de sodio, cloretos e potassio. Faz decrescer a excreção da amonia e de acidosa dos pacientes toxemicos com volume extracelular excessivo.

2. A acetazolamide é um natriuretico eficiente para a toxemia gravidica ou puerperal.

3. A administração diaria de 250 mg quando o balanço eletrolitico é normal produz um efeito hidrico e sodicio minimo, levando, nos pacientes toxemicos sem sinais clinicos de volume liquido extracelular excessivo a uma hipocaliemia.

4. Emboram não tenham sido assinalados efeitos toxicos nas mães e filhos com a dosagem usada neste estudo, mostra-se desejavel manter a vigilancia sobre a dose total e duração do tratamento pela acetazolamide.

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In addition to sensitiveness to horses, some people are sensitive to cattle, to sheep. hogs. dogs, cats. rabbits, mice. chickens. ducks, and geese. Many individuals are known to be sensitive to chicken feathers and have attacks of asthma whenever they sleep on a feather pillow. Many patients long subject to asthmatic attacks have seen a complete disappearance of their symptoms when they abandoned the use of sleeping-pillows.

—*Major*

A New Type of Tendon Transplant Operation for Abducens Paralysis

ROBERT J. SCHILLINGER, M.D.
LOS ANGELES, CALIFORNIA

The basic elements of a successful tendon transplant for abducens paralysis are discussed, and a simplified procedure is described, which does not require splitting the tendons of the vertical recti. Two cases are reported, with preoperative and postoperative illustrations, showing that vertical muscle balance has been preserved.

THE operation for abducens paralysis has two main component problems that must be solved in order to obtain a good result. The main one consists of balancing the pull of the internal rectus muscle against that of the externus; the second, of strengthening the abducting power of the eye by transplantation of the superior and inferior recti in such a manner as to enhance their secondary function of abduction.

Spaeth[1] discussed in detail the futility of the tendon transplant operation when the paralyzed eye does not move spontaneously to the midline when both eyes are directed to the paralyzed side. If the paralyzed eye cannot do this, a preliminary recession of the internal rectus muscle is indicated, or it may even be necessary to do this at a subsequent operation. At any rate, he advised against doing a tendon transplant and a recession of the internal rectus simultaneously. Lateral rectus resection, however, is done at the same time.

Berens[2] usually combines both a resection of the lateral rectus and a recession of the internus with the tendon transplant unless there is a definite contraindication, such as a poor near point of convergence or a greater esotropia for far than at near vision. He believes that if a recession of the internus is possible, it will greatly enhance the end result.

Unless this main problem of lateral balance is solved in each individual case, the tendon transplant operation is doomed to failure. In my own opinion, the use of the forced duction test is of great help in arriving at a decision, and if at operation the eye rotates easily in both lateral directions the second step of the operation (tendon transplant) may be carried out.

Berens' modification of the original Hummelsheim operation (Fig. 1) is probably the most popular today. Figure 2 shows my own procedure, in which, instead of splitting the superior and inferior rectus tendons, all that is necessary is to transplant the intact tendons midway be-

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From the Department of Ophthalmology, College of Medical Evangelists, Los Angeles.

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Submitted for publication March [illegible], [illegible].

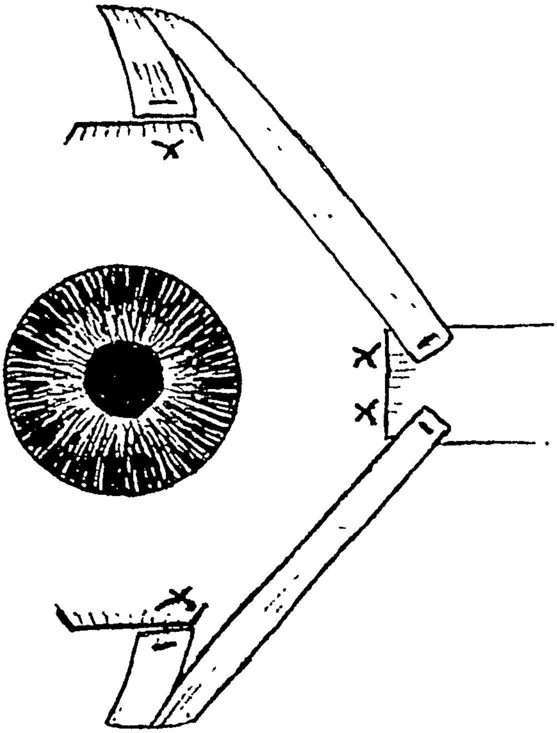


Fig. 1.—Berens' modification of the tendon transplant operation.

tween the lateral and vertical rectus muscle insertions. A double-armed No. 00000 chromic catgut suture is passed through the tendon in the following manner: First a central bite is taken and a square knot made, tying the central fibers; then each arm is threaded through the sides and a whipstitch taken at each border. The steps taken are depicted in Figure 3. This is the type of suture I use on the lateral recti also, for either recession or resection. The technic of transplanting the entire tendon offers the following advantages over splitting the tendons:

1. It is much more easily performed.
2. It is less hazardous, because the very thin halves of the tendon may conceivably tear during the operation.
3. It maintains the integrity of the tendons.
4. The secondary abduction function of the vertical recti is greatly enhanced.

When the idea of this modification first occurred to me, the possibility of disturbing vertical function had to be taken into consideration. Logical reasoning, however, can only conclude that, even if vertical muscles are split in two, the resultant pull will be exerted halfway between the two tendon slips. The real proof of this statement can be found only in actual operation, of course. This is a report of two such operations, in neither of which did vertical imbalance occur and in each of which the paralyzed eye could abduct and adduct 30 arc degrees postoperatively (total of 60 degrees).

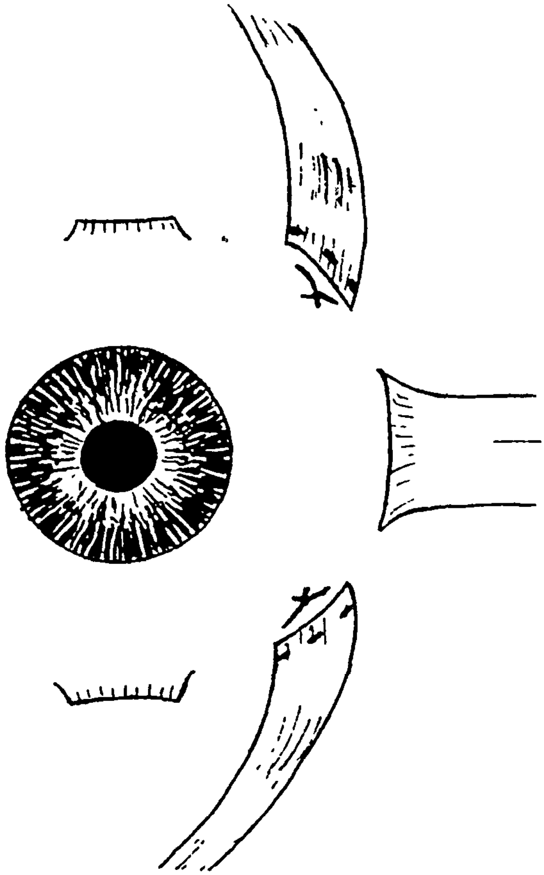


Fig. 2.—Author's modification, showing transplantation of the intact superior and inferior rectus tendons halfway between their points of insertion and that of the lateral rectus.

CASE 1.—A 9-year-old boy with complete congenital paralysis of abduction of the left eye had vision of 6/6 in each eye, with third-degree fusion. Since the eye moved to the midline spontaneously when looking to the left (Fig. 4 *A*, *B* and *C*), the internal rectus muscle was not recessed. The lateral rectus was left intact and the superior and inferior recti transplanted midway between their insertions as shown in Fig. 5, *A* - *H* inclusive. The forced duction test at the end of the operation showed difficult abduction. The result of this operation was disappointing, and six weeks later a 5 mm. recession of the internal rectus was performed, with a good final result. The affected eye can rotate in and out more than 30 arc degrees as measured on the perimeter. Vertical motion is not affected (Fig. 6, *A* - *E* inclusive).

CASE 2.—A 4-year-old girl had congenital abducens paralysis of the left eye. The eye moved to the midline spontaneously when looking to the left (Fig. 7, *A*, *B* and *C*). The vertical recti were transplanted in the manner aforedescribed. Forced duction revealed lack of lateral mobility of the eye; therefore, a 4 mm. recession of the internus was done, with a 4 mm. tuck of the lateral rectus muscle, all at the same sitting. The result is shown in Fig. 8, *A* - *E* inclusive. There is no vertical imbalance, and lateral motion is 30 arc degrees each way as measured on the perimeter (total of 60). The child's vision is 6/7 in both eyes, with second-degree fusion.

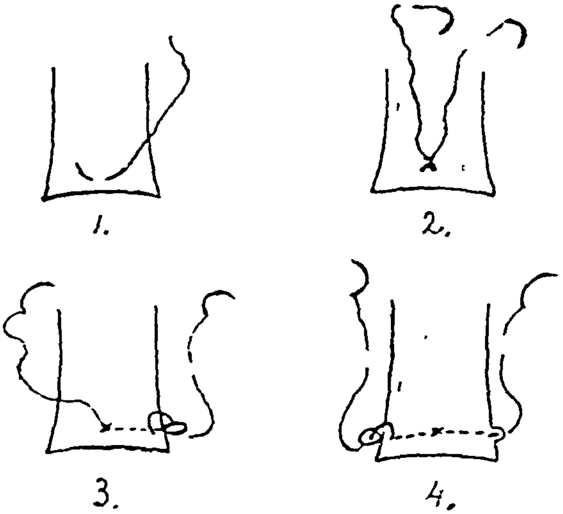


Fig. 3.—A double-armed No. 00000 chromic catgut suture is used. A central bite is first taken (*1*) and a square knot tied (*2*); then each arm is threaded through the sides and a whipstitch taken at each border (*3*, *4*).

COMMENT

A review of the English literature shows that at least two other investigators hit upon the same idea before it occurred to me. Hildreth[3] mentioned it in 1953, with the report of a most interesting experiment. While operating on a young man for esotropia, with local anesthesia, he completely severed the internal and external recti from their insertions. No horizontal movement was now possible. The tendons of the vertical recti were then exposed, and a loop of silk thread was passed around them to approximate them (Fig. 9). The more the loop was tightened, the better could the patient abduct while on the operating table, showing that no training was required and displacement of the tendons

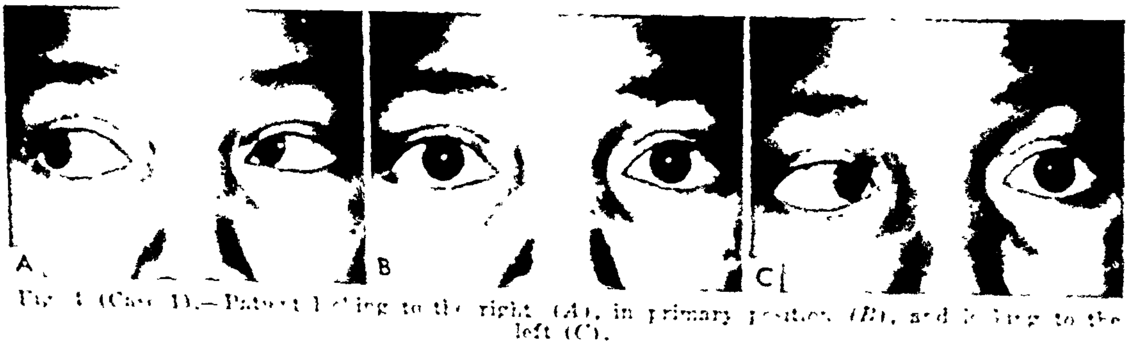


Fig. 4 (Case 1).—Patient looking to the right (*A*), in primary position (*B*), and looking to the left (*C*).

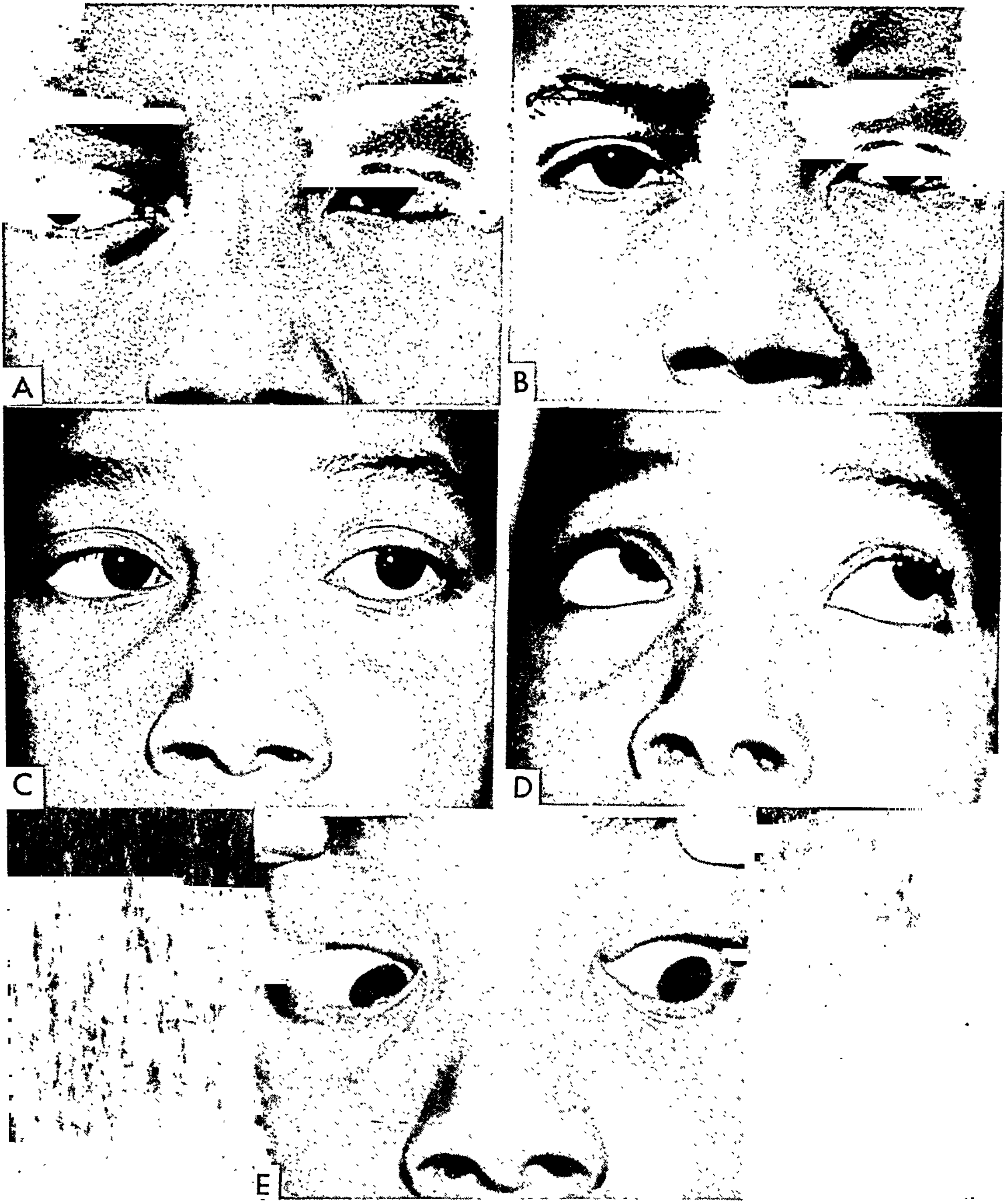
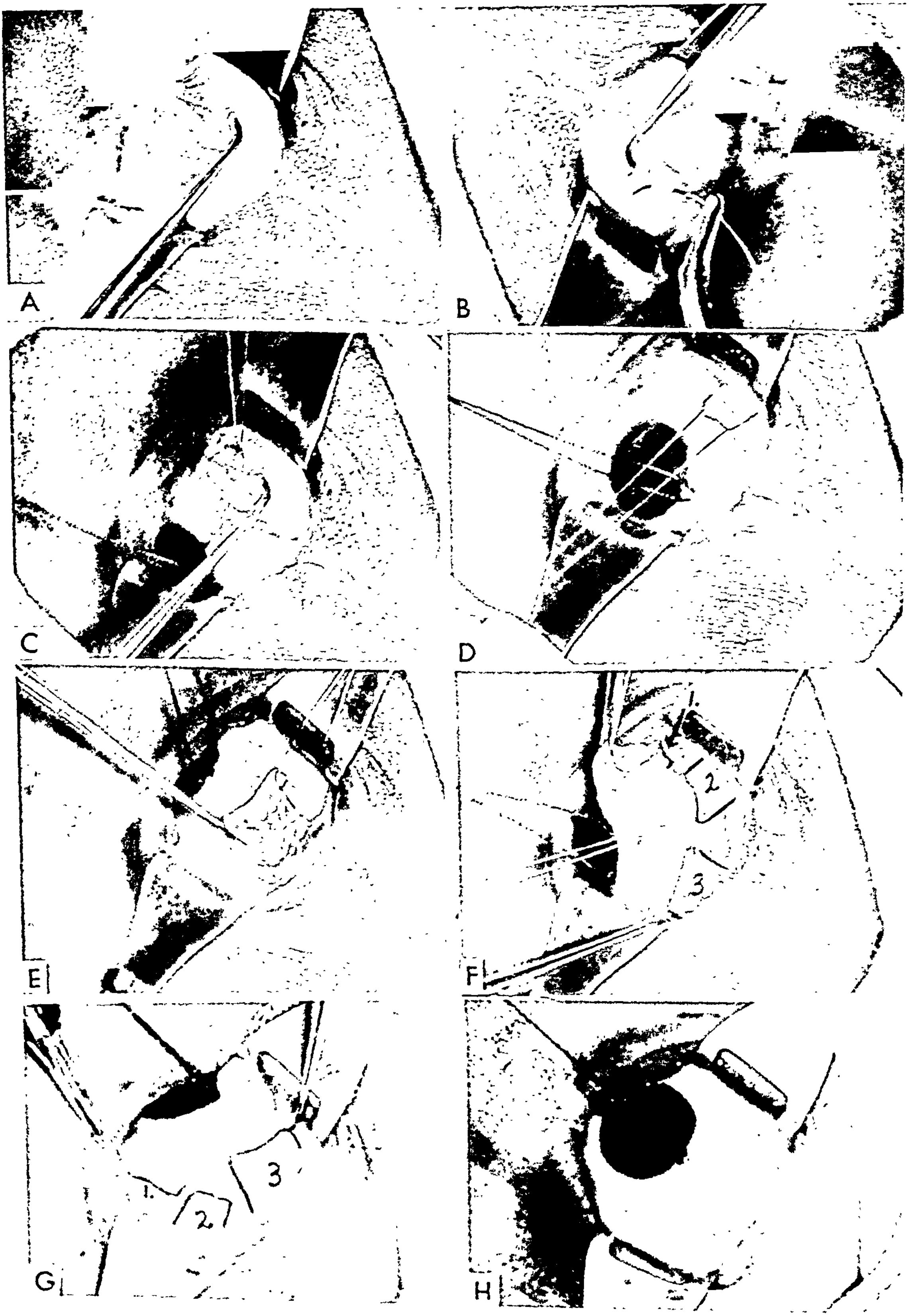


Fig. 6.—Postoperative appearance of patient in Case 1. Patient looking to right (*A*), in primary position (*B*), looking to left (*C*), looking up and down and to left (*D, E*), showing no impairment of vertical rectus action.

Fig. 5 (*opposite*).—Tendon transplant operation. Superior rectus isolated (*A*); bite taken in center of tendon (*B*); square knot tied (*C*); arms have been threaded through the sides and a whipstitch taken at each border, tendon cut free (*D*); lateral rectus demonstrated (*E*); needles having passed through sclera, tendon is now anchored (*F*) in new position (superior rectus stump, *1*; superior rectus tendon, *2*; lateral rectus, *3*). Same procedure has been done below (*G*). (Inferior rectus stump, *1*; inferior rectus tendon, *2*; lateral rectus, *3*); conjunctiva closed with No. 00000 plain catgut (*H*).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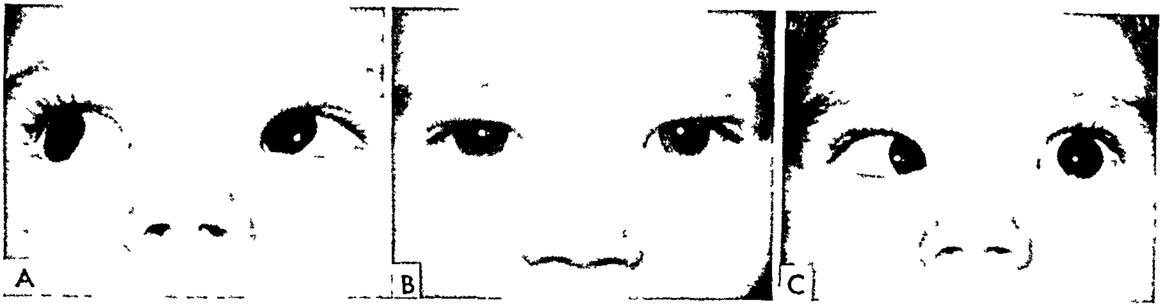

Fig. 7.—Preoperative appearance in Case 2. Patient looking to right (*A*), in primary position (*B*), and looking to left (*C*).

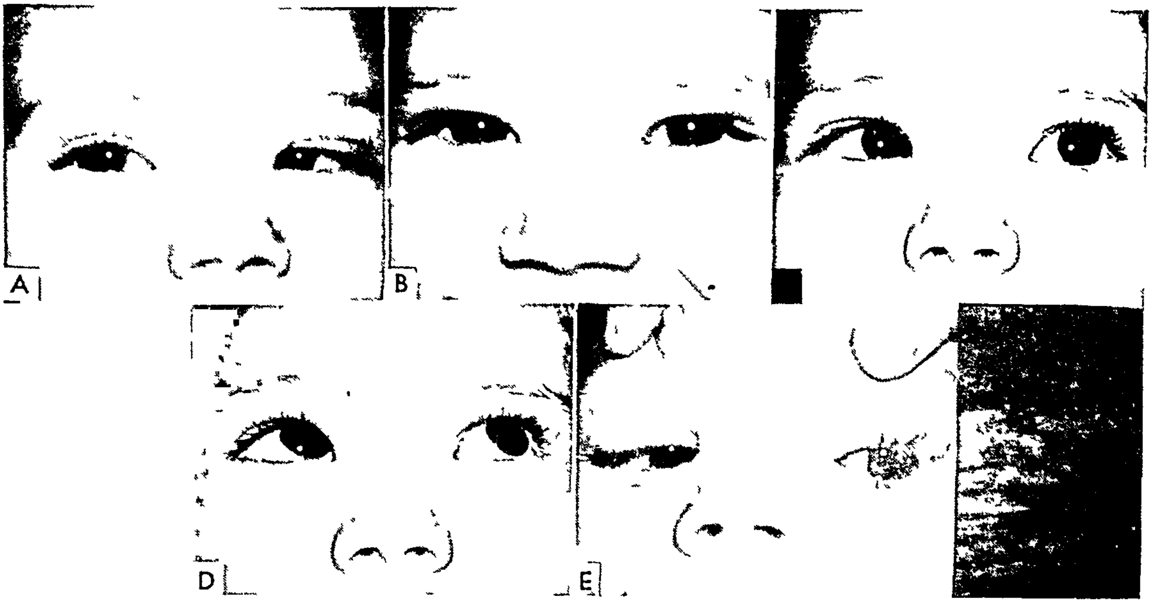

Fig. 8.—Postoperative appearance of patient in Case 2. Patient looking to right (*A*), in primary position (*B*), looking to left (*C*), and looking up and down and to left (*D, E*), showing no impairment of vertical rectus action.

laterally is all that is required. Hildreth then removed the suture and finished the operation for esotropia as planned. He did not pursue this idea any further, however, because of O'Connor's experiences.

O'Connor[4] actually performed the total tendon transplant operation for abducens paralysis in 6 cases. In none was the internus cut. The results were variable, and in the last case he obtained a "marked vertical deviation" that required another operation. He did not identify the type of hypertropia obtained, but it made him abandon the procedure in favor of transplanting the medial thirds. In my opinion there is a good possibility that this vertical deviation might have occurred no matter what type of transplant was used. It is not always possible to state preoperatively whether a patient has hypertropia or not, since the eyes cannot be examined in all cardinal directions of gaze. A latent vertical deviation can therefore easily become manifest once the patient can move the eye toward the paralyzed side. I am therefore convinced that the many advan-

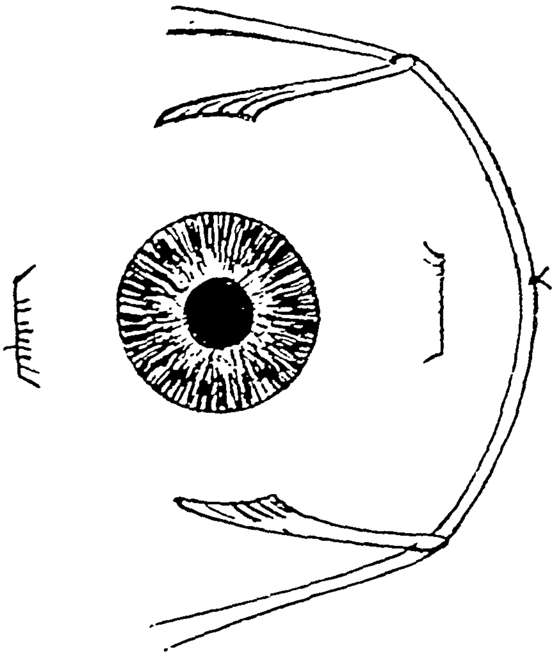

Fig. 9.—Hildreth's experiment. The lateral recti have been completely severed from their insertions and a temporary silk suture passed around vertical recti, approximating them over temporal side of globe. Patient could then abduct eye.

tages of this simplified procedure make it the operation of choice, especially since vertical action is not affected.

RESUMEN

Se trata en este trabao de los elementos básicos para el éxito del transplante tendinoso a la parálisis de la abducción que no requiere transfisión logitudinal de los elementos verticales del tendón. Se presentan dos casos, incluyendo el pre y el postoperatorio que muestran cómo se ha conservado la organización vertical.

RESUME

Les éléments de base d'une bonne transplantation de tendon en cas de paralysie des abducteurs sont discutés, et un procédé simplifié est décrit, qui n'exige pas la division des tendons des grands droits. Deux cas sont rapportés avec illustrations montrant l'état pré- et post-opératoire; l'équilibre musculaire a été conservé dans la verticale.

SUMARIO

Säo discutidos pelo A. os elementos basicos dos enxertos tendinosos para paralisia do abductor que descreve um metodo simplificado. Apresenta dois casos com ilustrações pre e pos operatorias mostrando que o equilibrio muscular pode ser preservado.

ZUSAMMENFASSUNG

Die grundlegenden Voraussetzungen für eine erfolgreiche Transplantation der Sehnen bei Fällen von Lähmung des N. abducens werden erörtert. Es wird ein vereinfachtes Verfahren beschrieben, das keine Spaltung der Sehnen der vertikalen Rektusmuskeln erfordert. An Hand von Illustrationen vor und nach der Operation wird über zwei Fälle berichtet, die zeigen, dass die Balance der vertikalen Muskeln erhalten blieb.

RIASSUNTO

Vengono discussi gli elementi necessari quando si voglia esequire con successo il trapianto tendineo per la paralisi dell'abducente e viene descritta una tecnica semplificata che non comporta la sezione del tendine del muscolo retto. Vengono riportati due casi.

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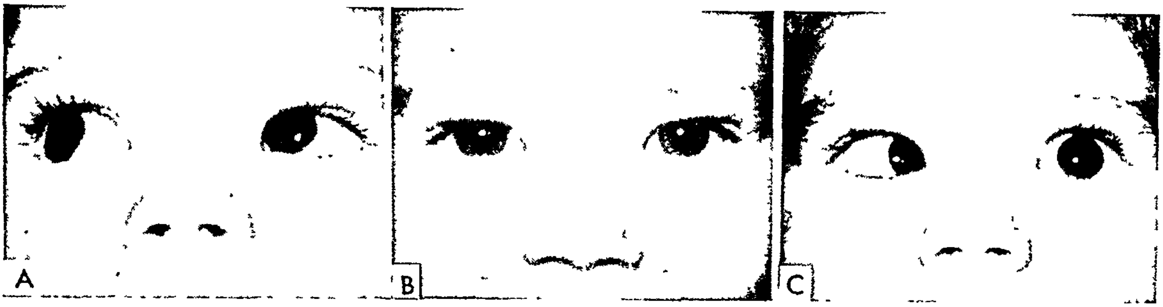
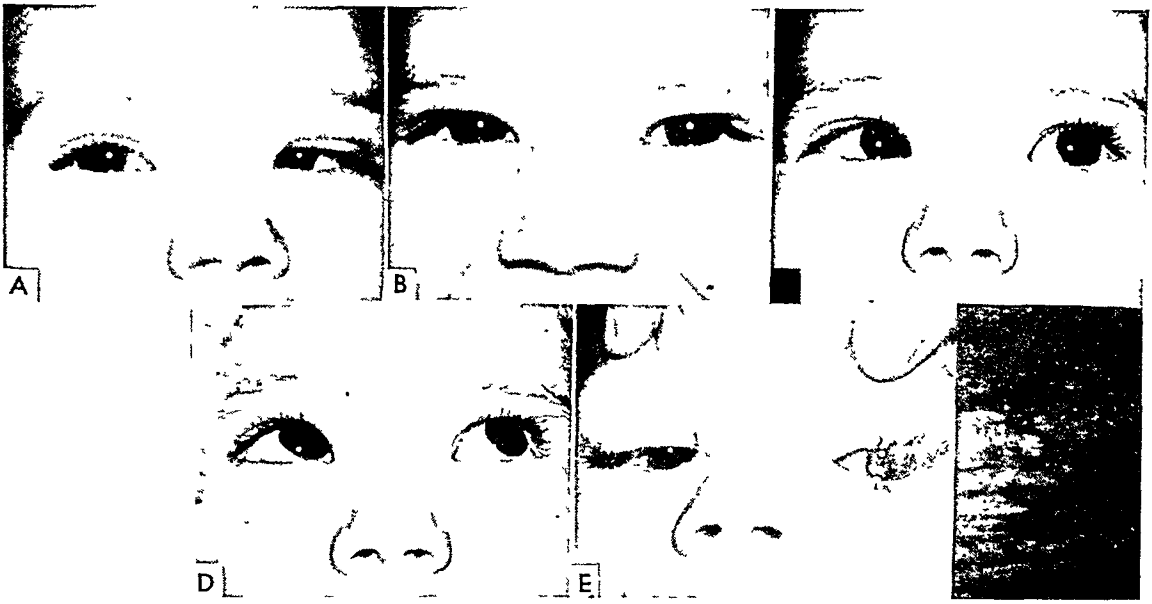


Fig. 7.—Preoperative appearance in Case 2. Patient looking to right (*A*), in primary position (*B*), and looking to left (*C*).



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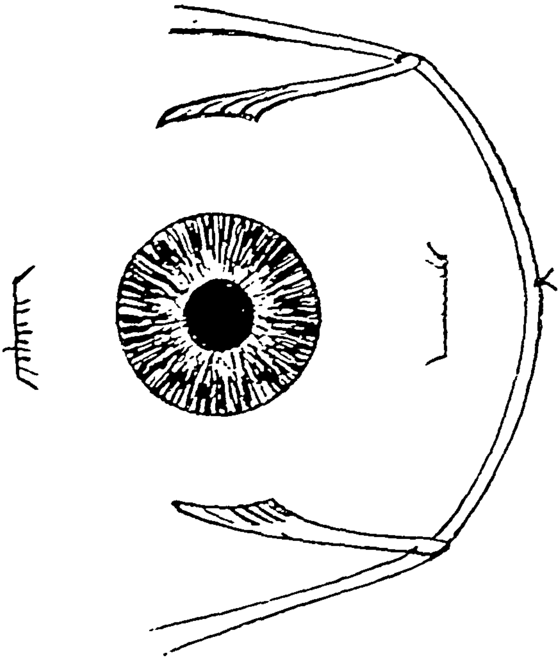

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Editorial

Reflections on the Conquest of Pain, Infection and Hemorrhage

EUGENE M. K. GEILING, M.D., F.I.C.S.
CHICAGO, ILLINOIS

EVER since man's advent on earth three great evils have plagued him: pain, infection and hemorrhage. These same terrors embittered the healing art and impeded its progress for many centuries. Then in a relatively short space of time, the quarter century from about 1846 to 1873, a new era dawned. In this brief span the three evils aforementioned were suddenly robbed of most of their terror. Probably more was accomplished in this short period to place surgery on a truly scientific basis than in all the centuries that preceded this wondrous period (Halsted).

Introduction of Anesthesia.—Pain presented what seemed an insoluble problem to the surgeon, even though such substances as alcohol, mandragora, and opiates as well as physical methods, had been known and used for centuries. The best surgeons of the day were those who worked rapidly. For example, an efficient surgeon, before the discovery of anesthesia, could hack off a limb in thirty seconds. The seemingly insurmountable problem of pain was largely resolved with dramatic suddenness in 1846, with the introduction of ether as an effective general anesthetic.

Surgery was thus largely freed from one of its three great evils. The story of this discovery has been told factually as well as dramatically in many places. A few additional comments seem warranted, however, to link antisepsis, asepsis and anesthesia with surgical development.

The immediate benefits to humanity of

During the forthcoming months of 1959 and as long thereafter as possible, the editorial pages of the Journal of the International College of Surgeons *will be occupied by presentations of rare and extraordinary historic value, the lectures presented at the International Surgeons' Hall of Fame on medical and surgical history from the earliest recorded achievements to those of our own times. We believe that Journal readers who were not able to attend the lectures will find them as exciting as did the audiences present at their delivery. The story of progress in the healing arts and the giants of medicine and surgery to whom we owe the amazing brilliance and scope of modern achievement is intrinsically thrilling and is a vital part of the education of every cultivated man and woman, inside or outside the profession. It is altogether fitting that it should appear in these pages, since the International College of Surgeons is first, last and always a teaching institution.*

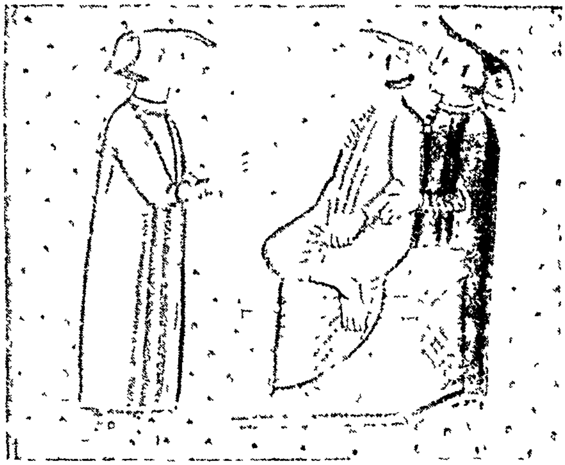


Fig. 1.—Theodoric de Lucca (thirteenth century). From fourteenth century manuscript in the library of the University of Leiden. Picture from *The Surgery* of Theodoric-Eldridge Campbell and James Coiton, Appleton-Century-Crofts, Inc., 1955.

the discovery of anesthesia and its great influence upon medical science have never been questioned. William H. Welch refers to this discovery as "the happiest gift ever conferred upon mankind by medical science"; Weir Mitchell calls it "the death of pain."

A fact not generally recognized is that the first actual use of ether to produce deep anesthesia in human subjects was a daring, as well as a risky, procedure performed by surgeons and dentists who had little or no training in experimental methods, even though animal experimentation was already well recognized in physiologic research.

Ether anesthesia was widely employed immediately after the public demonstration of its efficacy by Morton in 1846. It is regrettable that the principals, Morton, Wells and Jackson, were not actuated by idealistic motives in furthering the proper use of ether; they were concerned much more with personal gain. Their ultimate tragic fate is now a well-known fact of history.

Chloroform, too, was widely used in the British Isles soon after Simpson's initial use of it in 1847. The improper use of both these agents caused a number of deaths. Much credit, however, belongs to John Snow of London, a prominent physician who recognized early the great value of these new agents, and stated that deaths caused by these drugs were due to their improper use. Through experimentation he devised suitable inhalers, described the different stages of anesthesia and showed that the depth of anesthesia paralleled the concentration of the anesthetic in the blood. Snow's work pointed the way toward a more rational use of chloroform and ether, eventuating in a marked reduction in the death rate associated with these agents.

Another important fact that needs special emphasis is that the introduction of ether and of chloroform was not quite the perfect boon to mankind that had generally been supposed. It is true that their use (a) spared the patient much suffering, (b) enabled the surgeon to work more slowly with less tension, and (c) thereby facilitated the control of hemorrhage.

Although these new anesthetics did make possible many more operations, the surgeon still had to operate with the terror of infection constantly plaguing him. The postoperative mortality rate actually increased; and this state of affairs caused great concern to many surgeons, who still operated in unhygienic rooms with unclean instruments and dressed in street coats often spattered with the blood and pus of previous operations. "Sepsis was almost inevitable, and the mortality from erysipelas, septicemia, and hospital gangrene rose in many cases to 90%. Pus that localized was 'laudable' pus, and was (generally) deemed essential for healing. Healing by 'first intention' was rarely observed. Because there was lacking a knowledge of the cause of secondary infection and of effective methods of preventing it, the surgeon of that era predicted that the abdomen, the brain, and the chest are forever shut from the intrusions of the surgeon."

Introduction of Antisepsis.—Early History: As early as the thirteenth and fourteenth centuries there were a few surgeons who were convinced that "laudable pus" was not necessary for wound healing. In the thirteenth and early fourteenth centuries at least three surgeons—Hugo de Lucca (circa 1160-1257), his son and follower, Theodoric (1205-1298) and Henry de Mondeville (1260-1320), the pupil of Theodoric, refuted the "laudable pus" idea.

The views of Theodoric de Lucca are especially significant. He is generally referred to as the forerunner of both modern anesthesia (soporific sponge) and antiseptic surgery. He insisted that suppuration or pus formation in wounds was unnecessary and undesirable. "It is not necessary," he said, "that pus should be generated in wounds. No error can be greater than this. Such a practice is indeed to hinder nature, to prolong the disease, and to prevent the conglutination and consolidation of the wound" (Book II, ch. 27). Sir Clifford Allbutt points out that this simple, direct statement makes Theodoric one of the most original surgeons of all time, for only Mondeville (his pupil) and Paracelsus upheld these principles before Lord Lister and von Bergmann. In the long interregnum "The advocates of suppuration won all along the line." Theodoric urged cleanliness and the use of alcohol or wine to cleanse the wound. He rejected Galen's pastes and salves, the application of which was the generally accepted method of treating wounds. He was convinced that healing by first intent could be accomplished through cleanliness and approximation of the edges of the wound. Theodoric's ideas were not accepted, and he was subjected to very severe criticism by most of the physicians of his time. Even Guy de Chauliac, the most eminent surgeon of the fourteenth century, attacked

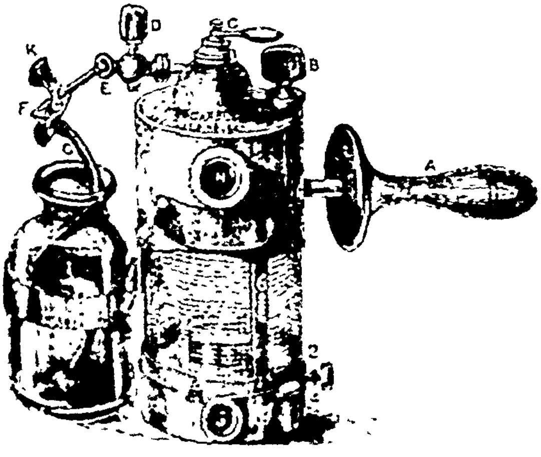


Fig. 2.—Steam spray used by Lister (use abandoned in 1887).

Fig. 3.—Joseph Lister, taken about the time he developed his antiseptic surgical technic (1865).

his views on wound healing and referred to him as a copyist and a plagiarist.

Another kindred spirit who emphasized cleanliness was a sixteenth century barber surgeon and the greatest surgeon of the Renaissance, Ambroise Paré. He emphasized the healing power of nature and rejected the use of boiling oil, substituting turpentine as a cleansing agent. He did, however, subscribe to the necessity of pus formation in wound healing.

Toward the end of the eighteenth century the infectious nature of childbed fever was beginning to be recognized, especially in Britain, by such men as William Smellie, William Hunter, John Leake, Alexander Gordon (of Aberdeen) and notably Charles White, of Manchester, who in 1773 wrote "A Treatise on the Management of Pregnant and Lying-In Women." In this paper he advocated the use of emollient and antiseptic injections into the uterine cavity in cases where the lochia had become fetid. He insisted upon strict cleanliness and adequate ventilation.

In the field of obstetrics also, Ignaz Semmelweis (1818-1865) and Oliver Wendell Holmes (1809-1894) stressed the importance of cleanliness in reducing mortality due to childbed fever. Oliver Wendell Holmes, perhaps best known for his *Medical Essays* (Baton, 1888) and as a man of letters, in 1843 wrote a very provocative essay, "The Contagiousness of Puerperal Fever." In this medical classic, which he read before the Boston Society of Medical Improvement, he pointed out that this disease was frequently carried by the doctor

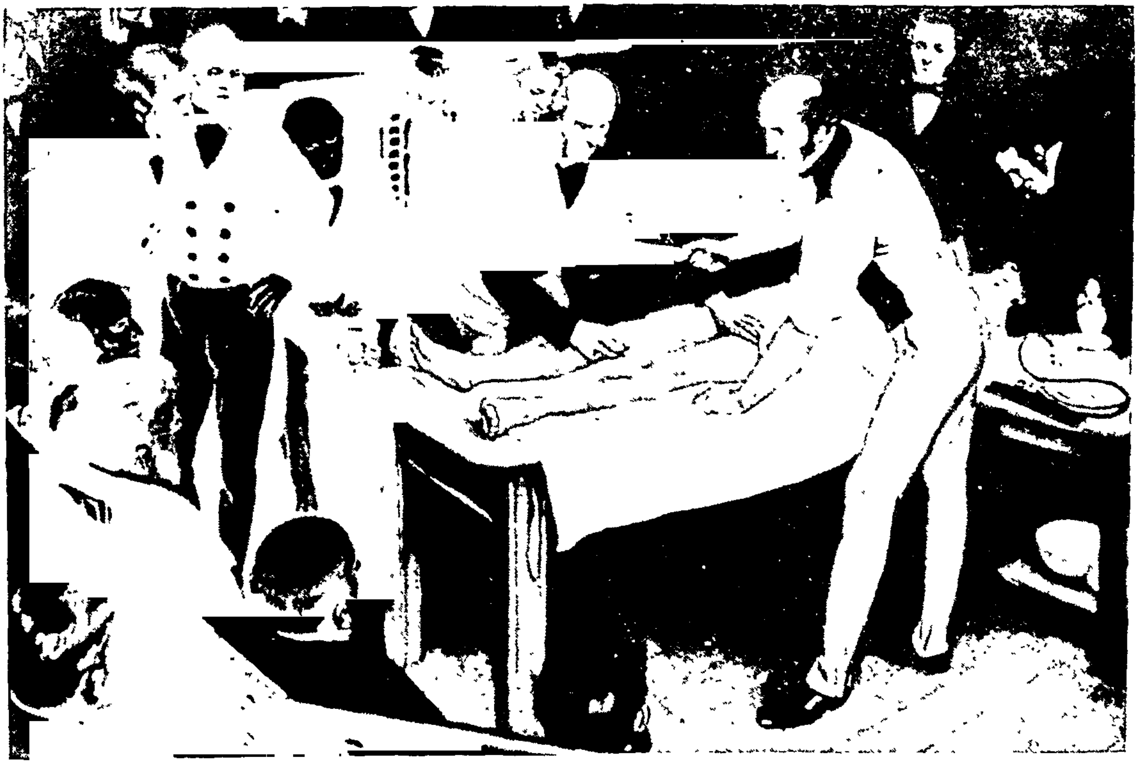


Fig. 4.—Robert Liston performing the first operation with ether anesthesia in Britain at University College Hospital, London, in December 1846. Joseph Lister (leaning forward, upper left) was a spectator on this occasion. (From: Lord Lister. By: Douglas Guthrie.)

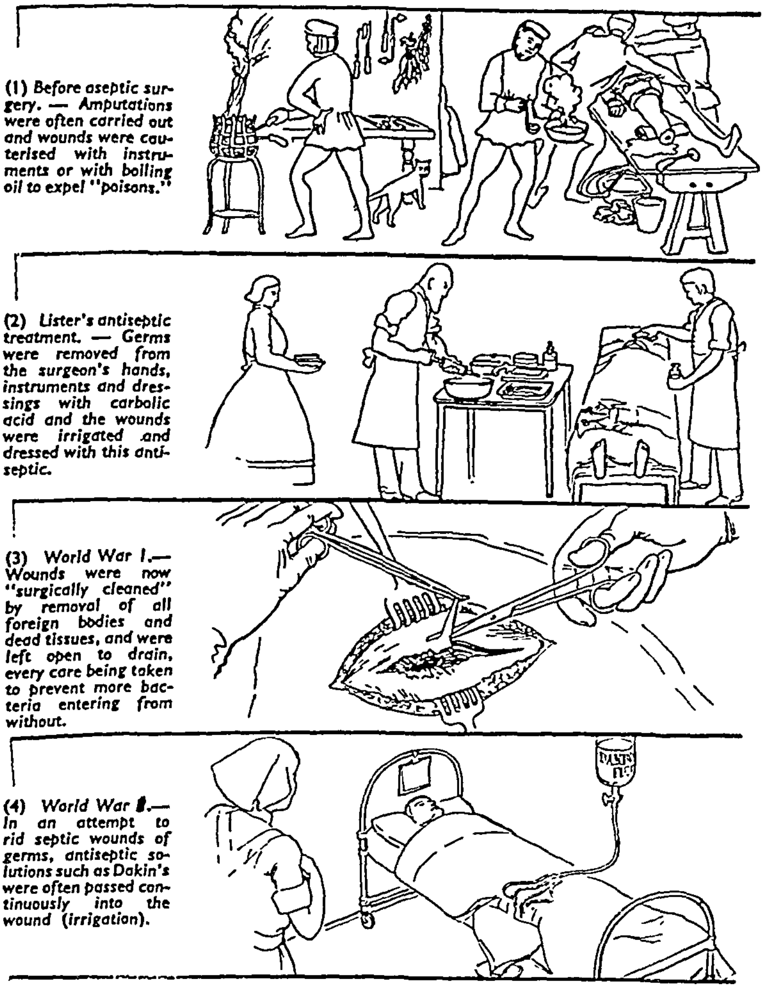
from one patient to another, or from a patient with erysipelas to a mother recently delivered of a child. Holmes regarded the dissecting room as a source of infection; he advised washing the hands in chloride of lime and changing clothes before attending a confinement. Needless to say, his views were vigorously attacked by the leading obstetricians of the day. Holmes's essay was published four years before Semmelweis's contribution to the problem. Holmes, however, did little to implement his views. Semmelweis, on the other hand, forbade students and physicians to enter obstetrical wards directly from the dissecting room or from an autopsy. He required them to wash their hands thoroughly in a solution of chloride of lime. After this innovation was introduced the mortality rate dropped from 18 per cent to 1 per cent; nevertheless, his views were so vigorously attacked by his colleagues that he was forced to resign. He had a severe nervous breakdown and died in a mental hospital at the early age of 46.

Pasteur and Lister: From the foregoing brief review, it is apparent that there were partially successful, even though empirical, attempts to lower the mortality rate associated with childbed fever and surgical infections by cleanliness and the use of disinfectants. What surgery has become today it owes in large measure to the experimental work of Louis Pasteur and Joseph Lister, who were instrumental in "smashing the spectre of infection as it haunted the surgeon." Their contributions were so revolutionary that many historians have divided the entire history of surgery into two epochs—before and after Lister.

Joseph Baron Lister (1827-1912), one of the greatest figures in medical history, was not only a skillful surgeon but a seasoned investigator. While a medical student in the University of London he did several highly creditable pieces of research, and published four research papers shortly after receiving his degree in medicine. After graduation he went to Edinburgh and served under Syme, the leading British surgeon of his day. Then he was called to the Chair of Surgery in the University of Glasgow (1860), and it was here that he began his epoch-making researches which led to the development of the technics of antiseptic surgery.

Lister was distressed at the prevalence of hospital gangrene and the high mortality rate following surgical procedures that were technically correct. He also noted that open wounds, notably compound fractures, were much more liable to infection than injuries and simple fractures in which the skin remained intact. He sought every available means of reducing this high mortality in his surgical wards. In spite of extreme cleanliness and the use of a solution of potassium permanganate (Condy's fluid) and other deodorants, the incidence of infection and septicemia showed little improvement. He was convinced, however, that wounds need not secrete pus, and that healing could take place by "first intent." The question remained with him how to reduce infection and consequent death following operation. In his research work on inflammation, he was led to suspect that the cause of suppuration and infections of wounds was not the gases of the air, as was commonly believed, but something carried by the air. When he discussed this problem with Thomas Anderson, the professor of chemistry at the University of Glasgow, the latter called his attention to the work of Louis Pasteur. Lister immediately studied Pasteur's work and appreciated its significance.

Pasteur's researches, published before 1865, were the clues from which Lister developed his antiseptic surgery:



(1) *Before aseptic surgery. — Amputations were often carried out and wounds were cauterised with instruments or with boiling oil to expel "poisons."*

(2) *Lister's antiseptic treatment. — Germs were removed from the surgeon's hands, instruments and dressings with carbolic acid and the wounds were irrigated and dressed with this antiseptic.*

(3) *World War I.— Wounds were now "surgically cleaned" by removal of all foreign bodies and dead tissues, and were left open to drain, every care being taken to prevent more bacteria entering from without.*

(4) *World War II.— In an attempt to rid septic wounds of germs, antiseptic solutions such as Dakin's were often passed continuously into the wound (irrigation).*

Between the earliest recorded period and the early 19th Century little advance was made in the treatment of war wounds. Here we see some of the stages through which modern methods of treatment developed.

Fig. 5.—Some historical highlights in the treatment of war wounds. Taken From Molecules Against Microbes, by E. S. Duthie. London. Sigma Books Ltd., 1946.

"Putrefaction is a species of fermentation.

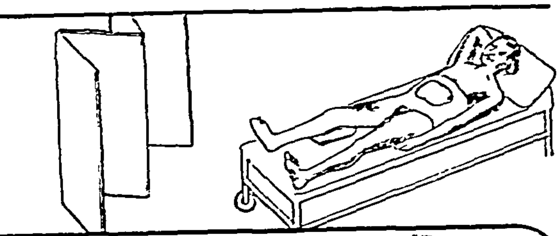
"It is caused by the growth of micro-organisms and does not occur independently of their presence.

"The micro-organisms that produce fermentation and putrefaction are carried by the air on the dust that floats in it. They also occur on and in solid and liquid substances.

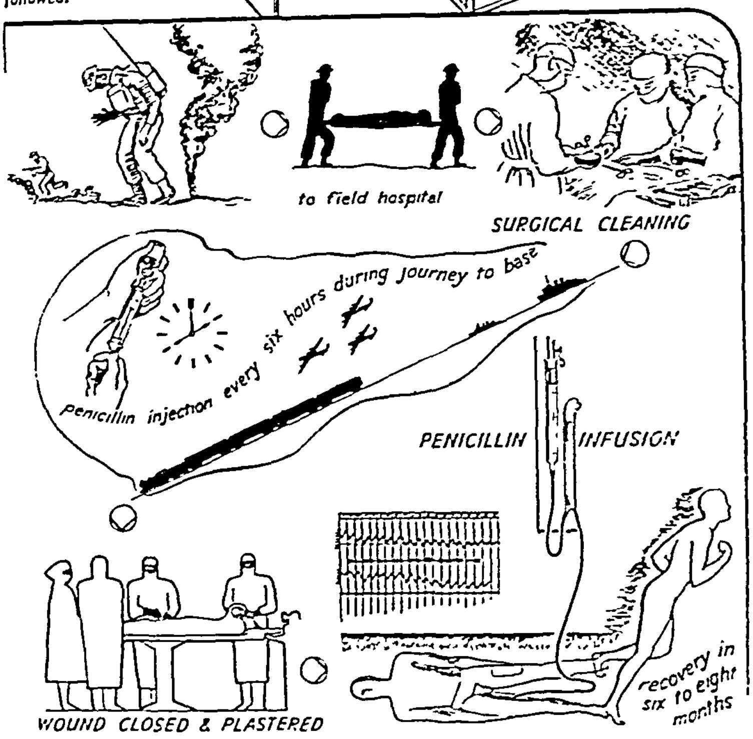
"These micro-organisms can be destroyed by heat and other agencies or separated from the air by filtration.

"Certain recognizable organisms produce definite and distinct fermentative processes.

"All of these organisms require oxygen. Some of them flourish only in the presence of free oxygen (aerobic), others only in its absence (anaerobic). The latter ac-



(5) Spanish Civil War—After "surgical cleaning" the limb was now encased completely in plaster so that no movement was possible. Infection remained localised in the wound and healing followed.


to field hospital
SURGICAL CLEANING
penicillin injection every six hours during journey to base
PENICILLIN INFUSION
WOUND CLOSED & PLASTERED
recovery in six to eight months

(6) World War II, D-day.—After "surgical cleaning" (in an advanced post) the wound was encased in plaster and penicillin was given. Penicillin was continued during transit and the greater number of these wounds were closed successfully soon after arrival at a base hospital. Battle fractures of the type illustrated usually healed rapidly, and with little or no permanent disability.

Fig. 5.—*Continued*

quire their oxygen from the bodies which, by their growth, they are causing to ferment and putrefy.

"Many natural animal and vegetable products have no tendency to ferment or putrefy, even in the presence of oxygen, if collected with proper precautions and kept uncontaminated in sterilized vessels.

"Spontaneous generation has never been observed to occur and thus may be regarded as a chimera."

Pasteur's notable discoveries fired Lister to seek means of destroying the organisms. He reasoned correctly that if the microbes were the cause of suppuration, then means must be sought to destroy them, and if they were destroyed, healing of wounds by first intention could be obtained. He then sought effective agents, other than heat, to destroy them.

After experimenting with various chemicals he decided to use carbolic acid,

Fig. 6.—Louis Pasteur.

or phenol. This he employed not only on dressings and operative instruments but as a spray in an attempt to sterilize not only the operative field but the air in the operating room. Gradually he adopted milder antiseptics and steam sterilization for his instruments (introduced by von Bergmann) and dressings. He also abandoned the use of the spray in 1887. He insisted that everything that touched the wound must be clean and treated with the antiseptic.

His method, known as *antiseptic surgery*, immediately yielded gratifying results. Surprisingly, however, his colleagues were critical of his methods, and relatively few of them adopted the new procedures until much later. It was the Franco-Prussian War of 1870 that was responsible for the acceptance of Lister's method of treating wounds. The Army surgeons on both sides used Lister's technic with success, thus greatly reducing the mortality from battle wounds. Lister himself wrote an article entitled "A Method of Antiseptic Treatment Applicable to Wounded Soldiers in the Present War," which was published in the *British Medical Journal* in 1870. In this he described a simple method of dressing gunshot wounds with carbolic lotion and carbolized oil, with such dressing materials as were likely to be on hand in the ambulances of that day. He explained also how the essential objects of the treatment could be applied in the management of compound fractures.

Lister's methods, at first ridiculed, were progressively accepted, from the experimental domain to the atmosphere of the clinic. Lister was fortunate to witness during his lifetime the full acceptance of his great discovery and to end his days in worldwide acclaim. In accepting these honors, he always acknowledged publicly his intellectual debt to Pasteur.

The transition from antiseptic to aseptic surgical technics was in part a change from the purely chemical to the chemical and physical methods of sterilization. The initial antiseptic technic relied upon destruction of the bacteria by antiseptic solutions. It was soon recognized that the chemical agents used, while destructive to the bacteria, also injured the tissues.

The later aseptic surgical technic was developed after it was recognized that infections were caused by bacteria introduced into the wound (a) from the skin of the patient, (b) from the hands and clothes of the surgeon and his assistants, and (c) from instruments, dressings and sutures. To eliminate these potential sources of contamination the following procedures were necessary:

1. Increased care in the cleansing of the skin of the patient in the operative field.

2. Scrubbing of the hands of the surgeons and their assistants, and then immersion of the hands in antiseptic solutions.
3. Boiling of instruments and certain suture materials, and
4. Autoclaving the dressings, towels and sheets.

Von Bergmann and others played an important part in the development of these later technics.

The role of the tissues themselves in combating infections was becoming well recognized, and will be mentioned in more detail in the next section dealing with Halsted's contributions.

No discussion of antisepsis and asepsis would be adequate without referring to William Stewart Halsted (1852-1922), one of the truly great scientific American surgeons. Having spent two years abroad in the laboratories and clinics of such men as Billroth, von Bergmann, Thiersch, and others, Halsted returned to New York in 1889, fired with enthusiasm for the many new technics and ideas he had acquired. He was particularly well acquainted with the Listerian principles of antiseptic surgery and the later additions of asepsis. Unfortunately Halsted, too, found much opposition to Lister's work among his surgical colleagues in the United States. He battled this opposition vigorously by precept and by example. While he was on the staff of the Bellevue Hospital he found it impossible to carry out antiseptic precautions in its operating rooms, "where the numerous anti-Lister surgeons dominated and predominated." The hospital authorities refused to erect an operation building for his sole use, but they authorized the erection of a "tent" designed for his special needs at a cost of $10,000 (funds supplied by a friend): it served his purpose admirably, but Halsted used it only for a few months, after which he left New York.

Halsted's guiding principle was that in operating one should attempt to restore the tissues to their normal or physiologic condition. To achieve this end it was essential to operate with great respect for the integrity and nutrition of the tissues, to stop hemorrhage from the tiny severed blood vessels, "to bring together the separated tissues in their natural relations if possible, and to leave no vacant spaces where stagnant fluid might collect and form a fertile medium for the growth of bacteria." In some cases a blood clot was deliberately allowed to fill an unavoidable space. Halsted's procedures combined the antiseptic technic of Lister and the aseptic technic of von Bergmann, Schimmelbusch and others with the necessity of maintaining the defensive power of the tissues by preserving their blood supply and protecting them from injury. Halsted demonstrated that bacteria could be introduced into the peritoneal cavity of a dog without ill effects, provided there was no mechanical injury to the tissues. If some small portion of the peritoneal tissue was bruised or deprived of its blood supply, then only a very small inoculum would rapidly produce fatal peritonitis. This simple experiment proved that the tissues possess a powerful defensive mechanism against bacteria if they are not injured.

Halsted's Experiments with Cocaine.—In 1884, Koller announced that cocaine would produce anesthesia when applied topically to the conjunctiva and to the cornea. Halsted sensed the importance of Koller's observation, and promptly began a series of experiments with cocaine by injecting the drug into himself, and his two associates. The results of these daring experiments led to what is regarded by many as the most brilliant of Halsted's many discoveries; namely, that cocaine injected into the trunk of a sensory nerve would render insensible the area supplied by the branches of this nerve. He found that the effects of the drug last longer if the circulation to the part is impeded by a bandage or tourniquet. He also observed that the injection of a nerve with saline, water and other fluids could produce anesthesia. Halsted's discovery soon came into general use, especially by dentists who honored him by presenting him with a gold medal in recognition of his work.

Halsted's discovery stimulated an enormous amount of experimentation directed towards:

(a) Search for new and less toxic local anesthetics, and for suitable antidotes.

(b) Use of local anesthesia for minor and major surgery where a general anesthetic is contraindicated.

(c) Addition of pressor substances such as epinephrine, etc. to prolong the effect of the local anesthetic.

(d) Use of local anesthetics for spinal anesthesia, regional anesthesia, infiltration, etc.

(e) Broadening the use of local anesthetics and perfecting the technic of their administration.

Fig. 7.—Dr. Halsted in 1909.

The addiction potentialities of cocaine were not known when Halsted began his experiments, and he became temporarily addicted to the drug. Fortunately, however, through almost superhuman efforts and the sympathetic understanding and encouragement of a few intimate friends, he conquered this affliction. It left him with a changed personality. MacCallum states that before this episode, Halsted "was a powerful, restless and tireless worker spending himself physically and mentally in endless operations . . ." After this episode, "he came back to a far more thoughtful, leisurely life, with time for reflection and contemplation of his surgical problems, a life in the end far more fruitful than . . . the strenuous rush . . . in New York." Perhaps, in his case it was probably no misfortune, but rather the reverse (Heuer).

In 1886 Halsted came to the Johns Hopkins University at the invitation of William H. Welch in whose pathological laboratory he began his work on intestinal sutures. In 1890 he was appointed the first Professor of Surgery and Surgeon-in-Chief of the newly opened Johns Hopkins Hospital. During the thirty-two years as the head of this department he instituted the residency program, encouraged young men in his department to develop special skills. He was not a dynamic or inspiring teacher of undergraduates, because of his quiet and reserved manner. However, by his irresistible example and encouragement of his assistants and residents, he built up one of the finest and most scholarly surgical departments in this country. A large number of his former residents became professors of surgery in some of our leading medical schools; others became leaders in their chosen field of work.

In 1890 he made another noteworthy contribution by introducing rubber gloves into the operating room. This discovery had a romantic aspect. Dr. Halsted's head nurse in his operating rooms suffered from dermatitis caused by the antiseptic cleansing solutions. With tender concern for the welfare of this woman, who later became his devoted wife, he explored the possibility of using rubber gloves to protect her hands. This exploration proved eminently successful.

Halsted, like Lister, had a thorough knowledge of anatomy, physiology and pathology and reduced surgical problems to their biologic basis. He sought advice from colleagues in the basic sciences, then proceeded to experiment on laboratory animals, exercising the same meticulous care with which he was accustomed to operate on patients. William H. Welch, in his introduction to MacCallum's informative biography of Halsted, characterizes his attitude towards research in the following statement: "Halsted was a lover and seeker of truth, possessing in eminent degree the qualities of the productive scientific investigator—richness in suggestion, clearness in formulation of his problems, keenness in observation, ingenuity in adapting experiment to solution of the problem in hand and lack of bias in the interpretation of results, even when in conflict with his own published opinions. As others have pointed out, there was much of the spirit of John Hunter and of Claude Bernard in the emphasis placed by Halsted upon experimental, biological methods in the study of many surgical problems."

His numerous contributions to surgery were best summed up in 1923 in a memorial address by Matas, who said: "In every advance that has marked the progress of surgery in the last thirty years (1890-1920) we find the impress of his hand and the reflex of his brain."

Hemorrhage and Restitution of Blood Volume.—The third great problem that hampered the progress of surgery for centuries is the control of hemorrhage and the maintenance or restitution of blood volume. The need for the restitution of blood and its use as a medicament goes far back into the ancient civilizations of the Egyptians and Hebrews. Blood was taken orally as a medicament for the restoration of blood in the body and because the ancients believed that therein lay the spirit of life. Efforts to control hemorrhage date back to the time of Hippocrates. It is not certain whether he introduced cauterization, but the practice came into general use during his time and remained in vogue for many centuries. It was not until the time of Paré (sixteenth century) that the cautery iron was discarded in favor of the ligature; it was already known to Galen, who, however, restricted its use to superficial wounds and never used it in amputations. Paré is credited with the reintroduction of the ligature, which he found preferable to cauterization for arresting hemorrhage in amputations. The next important advance was made by Morel, a little-known French surgeon who invented the tourniquet. More recently, Lister introduced the absorbable catgut ligature, having proved by animal experimentation that the ligature was resorbed. Many other refinements have since been added and need no further elaboration at this point.

William Harvey's demonstration of the circulation of the blood (1616) is ranked as one of the great contributions of all

Fig. 8.—Meeting of Pasteur and Lister at the Sorbonne, Paris, in 1892, on the occasion of Pasteur's seventieth birthday. (Painting by Count Calvi di Bergolo in the International Surgeons' Hall of Fame in Chicago.)

time. His work, like many other important discoveries, opened the way for a great deal of scientific work. Harvey did for physiologic experimentation what Vesalius did for anatomy.

Two further discoveries followed in rapid succession. Sir Christopher Wren and Robert Boyle in 1656 succeeded in injecting drugs intravenously into a dog by using a quill attached to a syringe. The first substances injected were opium and an infusion of oxide of antimony. This insignificant quill was the ancester of the modern hypodermic needle.

In 1654 Francis Folli, a Florentine physician, made the first successful transfusion of blood to an animal. He inserted a silver tube into the artery of a donor and a cannula of bone into the vein of the recipient. These were connected by a tubing of animal blood vessels. The groundwork for the use of blood transfusion without serious reactions was laid by the work of Landsteiner in 1900, when he introduced blood typing. This important discovery removed one of the great obstacles to the use of whole blood transfusions.

Another great problem in blood transfusion was the clotting of blood. To overcome this difficulty a number of technics were employed, such as paraffin-coated tubes, direct arteriovenous anastomosis and the removal of blood in a syringe, with immediate reinjection into the recipient's veins. The prevention of clotting led to the search for substances that would act as anticoagulants. The first pharmacological agent to retard clotting was hirudin (obtained from leeches). It was developed by John J. Abel and his associates, who used it in their studies of vividiffusion and vividialysis (1913-1914). At about the same time, sodium citrate was introduced by Howell, who obtained it from the liver. From this point onward, a great deal of fundamental research was done on the factors that govern the coagulation of blood and the physiologic role of the various components of blood. Perhaps one of the most useful developments in this field was the establishment of blood banks, which originated in Russia in 1936. The first institution of this kind in the United States came into being at the Cook County Hospital in Chicago, through the efforts of the pharmacologist Fantus. The phenomenal growth of blood banks and their great service in the saving of lives of both civilians and wounded soldiers is now common knowledge.

The most recent development in this field is the search for agents that are useful as blood substitutes. At present there is intense activity on the part of experimental teams composed of chemists, pharmacologists and surgeons, who are evaluating the numerous substances proposed as blood substitutes. It is recognized that the blood substitutes are not adequate for replacing whole blood; their primary purpose is to maintain blood volume, and they may be most effectively used in combating circulatory failure, especially in emergencies. Their main inadequacy is that they are not substitutes for the blood proteins and cellular elements. With these limitations, the need for the conservation of human whole blood and its components remains the paramount problem (*The Status of Blood Substitutes,* J.A.M.A. 147, 658-660, 1951).

Shock resulting from blood loss, burns or severe trauma is a problem intimately associated with wars and possible civilian disasters. It is receiving serious consideration in many quarters, in order to forestall mass disasters from a possible atomic bomb attack. The treatment of burns centers around the control of the loss of plasma, prevention of infection and the maintenance of an efficient circulation (see chapters 42 and 43 of *Modern Treatment,* by Austin Smith and Paul Wermer). The loss of plasma can be minimized by the use of pressure bandages, infection can be controlled by the newer anti-infective agents, and the circulation can be maintained by the use of the so-called plasma volume expanders, provided there has not been too great a loss of blood; otherwise, whole blood is indicated.

The prospect of coping with the injuries resulting from an atomic bomb explosion is a frightening task and presents the doctor with the colossal challenge of treating these injuries amid confusion and hysteria. The medical profession should accept this challenge in a spirit of calmness and determination, with the knowledge that workers in many fields are ready to assist the physician in every possible way.

It hardly needs mention that the progress in modern knowledge of hemorrhage and its control was gained by the cooperative efforts of workers in many fields of medical science.

Conclusion.—With the further development of aseptic technics and, more recently, the introduction of the anti-infectives, especially the sulfonamides and antibiotics, it may be truly said that infection is no longer an insurmountable problem in surgery. The great stimulus from the work of Pasteur and Lister has resulted in an enormous volume of research in many fields and illustrates the far-reaching influence of an important discovery.

With the solution of their three major problems, pain, infection and hemorrhage, surgeons have been able to utilize fully the technologic advances of the biologic and physical sciences, to carry out their own experimental investigations, and, in collaboration with workers in other fields, to develop the great potentialities of this branch of the healing art.

SELECTED SOURCES

Anesthesia, Antisepsis, Asepsis

Great Doctors. By Henry E. Sigerist (English translation of "Grosse Aerzte eine Geschichte der Heilkunde in Lebensbeldem," Lehmanns Munich, 1932) 1933—George Allen & Unwin Ltd., London.

Triumph over Pain. By René Fülöp-Miller. New York: The Literary Guild of America, Inc., 1938.

A Consideration of the Introduction of Surgical Anesthesia. By William H. Welch. Address delivered at the Massachusetts General Hospital on the sixty-second anniversary of Ether Day, Oct. 16, 1908. Boston: The Barta Press, 1908.

The Surgery of Theodoric (Vol. I). (Translated from the Latin by Eldridge Campbell and James Colton.) New York: Appleton-Century-Crofts, Inc., 1955.

The Apologie and Treatise of Ambroise Paré. By Geoffrey Keynes. Chicago: The University of Chicago Press, 1952.

Medieval Medicine. By J. J. Walsh. London: A. & C. Black, Ltd., 1920.

The Historical Relations of Medicine and Surgery. By T. Clifford Allbutt. New York: MacMillan and Company, 1905.

Louis Pasteur. By René J. Dubos. Boston: Little, Brown & Company, 1950.

La Vie de Pasteur. By R. Vallery-Radot. Paris: Hachette, 1922.

Le Laboratoire de M. Pasteur. By E. DuClaux, Centieme Anniversaire de la Naissance de Pasteur, Institut Pasteur. Paris: Hachette, 1922.

Lord Lister. By John Godlee Rickman. London: Oxford University Press, 1924, 3d ed.

Joseph Baron Lister (1827-1927). By A. Logan Turner. London: Oliver & Boyd, 1927.

Lord Lister. By Douglas Guthrie. Edinburgh: E. & S. Livingstone, Ltd., 1949, and Baltimore: The Williams and Wilkins Company, 1949.

The Collected Papers of Joseph Baron Lister. Edited by Hector Cameron, Watson Cheyne, Rickman Godlee, C. J. Martin and Dawson Williams. Oxford: The Clarendon Press, 1909.

William Stewart Halsted. By W. G. MacCallum. Baltimore: The Johns Hopkins University Press, 1930.

Heuer, G. J.: Dr. Halsted, Bull. Johns Hopkins Hosp. 90:1-80, 1952.

William S. Halsted (1852-1922): Collected Surgical Papers. Baltimore: The Johns Hopkins Press, 1924. In 2 volumes.

Hemorrhage and Restitution of Blood Volume

The History of Hemostasis. By S. C. Harvey. New York: Paul B. Hoeber, Inc., 1929.

Ficarra, B. J.: The Evolution of Blood Transfusion, Ann. Med. History 4:302, 1942.

Local Treatment of Thermal Cutaneous Burns, J.A.M.A. 125:969, 1944.

Jenner threw himself with enthusiasm into Hunter's work on comparative anatomy, and acquired the latter's beautiful technique in preserving specimens. He spent two years in the house in Jermyn Street and then returned to the life of a country doctor.

Soon after Jenner's return to Gloucestershire an interchange of letters began which lasted until Hunter's death. Jenner greatly treasured these letters from "the dear man," as he called his friend, and kept them together in a cover inscribed "letters from Mr. Hunter to E. Jenner." Fortunately many of them have survived and they help us to see a side of John Hunter which was not turned to the rest of the world. . . . It was a free-and-easy correspondence between two friends who trusted each other in all things and had no secrets, between Hunter in London and "his second self down in Gloucestershire" as Paget puts it. There are the usual forceful Hunterian remarks and expletives. a few family details. thanks for presents of fish and cheeses from the West Country, clinical details about patients, chat concerning hobbies and a wealth of running commentary on natural history subjects. especially hedgehogs ad cuckoos. They were written in spare moments and like all good letters quite spontaneously; probably most of them were jotted down late at night after a long day's work, and they were generally undated. They are the letters of a full life, bubbling over with ideas and questions to which no man knew the answers.

—*Gloyne*

New Books

BOOKS RECEIVED

The following books have been received by the Editor; they will be reviewed critically as space and facilities permit. Omission of more extended review, however is not to be taken as criticism of the merit of the book.

Operative Surgery. Edited by Charles Rob and Rodney Smith. London: Butterworth & Co., Ltd.; Philadelphia, F. A. Davis Co., 1956. Vols. 1 and 2 of 8 (plus index). Profusely illustrated.

Le Diagnostic du Cancer d'Estomac a la Periode Utile (Diagnosis of Carcinoma of the Stomach at the Time Most Favorable for Treatment). By Rene A. Gutmann. Paris: G. Doin et Cie, 1956. Pp. 257.

Pathology and Surgery of the Veins of the Lower Limbs. By Harold Dodd and Frank Cockett. Baltimore: The Williams & Wilkins Company, 1957. Pp. 462, illustrated.

Spinal Cord Compression. By I. M. Tarlov. Springfield, Ill.: Charles C Thomas, Publisher, 1957. Pp. 147, with 41 illustrations.

Functional Bracing of the Upper Extremities. By Miles H. Anderson. Springfield, Ill.: Charles C Thomas, Publisher, 1958. Pp. 463. Illustrated.

The Clinical Management of Varicose Veins. By David Woolfolk Barrow. New York: Paul B. Hoeber, 1957. Pp. 167, with 70 illustrations.

Homosexuality, Transvestism and Change of Sex. By Eugene de Savitsch. London: William Heinemann Medical Books Ltd., 1958. Pp. 120.

A Short Practice of Surgery. By Hamilton Bailey and McNeill Love, with chapters by John Charnley, William Cleland and Geoffry Knight. London: H. K. Lewis & Co., Ltd., 1959; Philadelphia: The J. B. Lippincott Company, 1959. 11th ed. Pp. 1389, with 1,697 illustrations, 285 in color. *Reviewed in this issue.*

Congenital Anomalies of the Hand and Their Surgical Treatment. By Arthur Joseph Barsky. Springfield, Ill.: Charles C Thomas, Publisher, 1959. Pp. 165, with 76 illustrations. *Reviewed in this issue.*

Personality and Nature in Modern Medicine. By Franz Buchner. New York and London: Grune and Stratton, 1958. Pp. 36. *Reviewed in this issue.*

The Management of Fractures and Dislocations. By Anthony de Palma. Philadelphia and London: The W. B. Saunders Company, 1959. In 2 volumes. Pp. 960, with 1,927 illustrations. *Reviewed in this issue.*

Ptoses Abdominales et Prolapsus Pelviens: Clinique et Thérapeutique Chirurgicales (Abdominal Ptosis and Pelvic Prolapse). By Lucien Diamant-Berger. Paris: G. Doin et Cie, 1958. Pp. 194, with 119 illustrations.

John Jacob Abel, M.D. Baltimore: The Williams & Wilkins Company, 1957. Pp. 80. *Reviewed in this issue.*

Reflux Oesophagitis. By J. G. Ton. Uitgeverij: Born, N.V. Pp. 116, with 31 illustrations. *Reviewed in this issue.*

Milestones in Modern Surgery. Edited by Alfred Hurwitz and George A. Degenshein, with a foreword by J. Engelbert Dunphy. New York: Paul B. Hoeber, Inc., 1958. Pp. 520. Illustrated.

Neurological Basis of Behavior. (CIBA Foundation Symposium.) Edited by G. E. W. Wolstenholme and C. M. O'Connor. Boston: Little, Brown and Company, 1958. Pp. 400, with 109 illustrations.

A Short Practice of Surgery. By Hamilton Bailey and McNeill Love, with chapters by John Charnley, William Cleland and Geoffry Knight. London: H. K. Lewis & Co., Ltd., 1959; Philadelphia: The J. B. Lippincott Company, 1959. 11th ed. Pp. 1389, with 1,697 illustrations, 285 in color.

The eleventh edition of this monumental work is a new edition in fact as well as in intention. No effort has been spared to bring the material strictly up to date, and the chapters on the thyroid, the ductless glands, the liver and the stomach have been completely rewritten. There are two completely new chapters, one on radiotherapy and one on fluid balance. The bibliographic references have been rechecked for accuracy, brought up to date and, when necessary, amplified.

In their preface to the new edition, the authors say rather ruefully that the Short Practice is not so short as it formerly was! We cannot sincerely say, however, that we foresee any complaints on this score. The book covers practically every known facet of surgical knowledge and practice and is written with the same masterly conciseness, clarity and economy that have always characterized it. What its character is well known to be is attested by the fact that the number of copies printed to meet the demand now exceeds 104,000; the demand may be judged by this and by the fact that an American edition will shortly be presented by the J. B. Lippincott Company of Philadelphia.

The majority of the text is the work of the two senior authors, whose world-wide reputation for skill in surgery and integrity in authorship are beyond praise. Mr. Bailey's work includes the new chapter on fluid and electrolyte balance, as well as the chapters dealing with surgical treatment of the face, jaws and palate; the teeth and gums; the mouth and tongue; the salivary glands; the neck; the thyroid gland and thyroglossal tract; the parathyroid, thymus and adrenal glands; the pharnyx; the esophagus; the stomach and duodenum; the spleen; the liver; the gallbladder and bile ducts; the pancrease; the intestines; the rectum and anal canal; symptoms of urinary disease, investigation of the urinary tract and anuria; the kidneys and ureters; the urinary bladder; the prostate and seminal vesicles; the urethra and penis; the testes and scrotum, and infections of the hand. Mr. Love contributes chapters on nonspecific infections and wounds; specific infectious diseases; tumors; ulceration and gangrene; blood and blood vessels; lymphatics and lymph nodes, and the skin. Two chapters were written by Mr. Bailey and Mr. Love in collaboration, one on the peritoneum, the omentum, the mesentery and the retroperitoneal space, and the other on the vermiform appendix. In four chapters, Mr. Charnley discusses injuries and diseases of the bones and joints, and in two others, respectively, the muscles, tendons and joints, and deformities in general. The chapter on thoracic surgery and the one dealing with the heart and pericardium are the work of Mr. Cleland. Four chapters have been written by Mr. Knight, on nerves, the head, the cranial nerves and the spine respectively.

The work is too well known and too widely used to require any introduction to the reading public, the first edition having appeared in 1932. A special commendation is due to the layout artist, who, as far as is humanly possible, has placed the illustrations on the page of reference—not an easy task, as anyone knows who has tried it. The number and excellence of the illustrations also compel praise; they are uniformly clear and well reproduced and offer an object lesson in economy of space. Those in color are highly reminiscent of the illustrations in Mr. Bailey's earlier definitive work on the vanishing art of diagnosis from the physical signs. The fact that there are 285 of these is further evidence, if any were needed, of the high and exacting standards maintained by the authors.

It might well go without saying, if it were not such a pleasure to say it, that this book is, as always, indispensable to the library of every general surgeon, every hospital and every medical school.

—M. T.

Congenital Anomalies of the Hand and Their Surgical Treatment. By Arthur Joseph Barsky. Springfield, Ill.: Charles C Thomas, Publisher, 1959. Pp. 165, with 76 illustrations.

This is a compact but useful monograph. The author is an attending surgeon for plastic surgery at Mount Sinai Hospital, New York City, and Professor of Clinical Surgery, Albert Einstein College of Medicine, New York City. He holds many other hospital appointments. This small book includes a brief discussion of the causation of congenital anomalies, a chapter on heredity in the transmission of these deformities from one generation to another, the embryologic picture and the diagnosis and treatment of both simple and complex congenital deformities of the hand. All who may be called upon to diagnose and treat such deformities will want a copy of this book.

—Edward L. Compere, M.D.

John Jacob Abel, M.D. Baltimore: The Williams & Wilkins Company, 1957. Pp. 80.

The Williams and Wilkins Company has published, for private distribution particularly to members of the American Society for Pharmacology and Experimental Therapeutics, a limited edition of papers by and about John Jacob Abel, who has been called the "father of American pharmacology."

Dr. Abel was a member of the first faculty of the Johns Hopkins School of Medicine and its first professor of pharmacology. In his long teaching career—1893 to 1938—his primary interest was the role of chemistry in scientific medicine. Best known for his work on the hormones, he is recognized as the man who first achieved the isolation of insulin in pure crystalline form.

Dr. Abel was also instrumental in the founding of the *Journal of Pharmacology and Experimental Therapeutics*, and was its editor from 1909 to 1932.

The book contains two papers about Dr. Abel and four written by him (two in collaboration with colleagues), reprinted from the medical literature. It is published to mark the one hundredth anniversary of Dr. Abel's birth, and is a worth-while addition to the history of medical progress.

—O. C.

The Management of Fractures and Dislocations. By Anthony de Palma. Philadelphia and London: The W. B. Saunders Company, 1959. In 2 volumes. Pp. 960, with 1,927 illustrations.

The author describes this rather massive two-volume set as a "comprehensive atlas of fractures and other joint injuries." That, indeed, is an excellent way to describe it. Each of the two volumes measures 9 by 12 inches, and the two together contain 960 pages with 1,927 illustrations. The text is limited to brief descriptions of the deformity, the prereduction roentgenogram, the technic of reducing each fracture or dislocation and the method of fixation or immobilization of the fracture after reduction. With few exceptions the illustrations are line drawings, which are simplified so that the story told by each can be grasped at a single glance. Dr. De Palma, who is Professor of Orthopaedic Surgery at Jefferson Medical College, Philadelphia, has described the method he personally prefers to use in the treatment of each injury, but he also lists alternate methods of treatment. Within the two volumes almost every conceivable fracture or dislocation of the spine and the extremities is described and illustrated, so that the essential characteristics of the lesions are readily recognized and the detailed methods of reduction, immobilization and postreduction management are clearly shown step by step.

—Edward L. Compere, M.D.

Vascular Surgery. By Geza de Takats. Philadelphia: W. B. Saunders Company, 1959. Pp. 726, with 382 illustrations.

Dr. de Takats has presented a most complex subject in a clear and understandable fashion. True it is that no author is omniscient; however, little is left wanting in this all-inclusive work on vascular surgery. For special commendation must be mentioned Chapter 5, "The Interview with the Patient" and Chapter 6, "The Examination." These dovetail beautifully with the presentation of the more technical and theoretical sections. Three hundred and eighty-two illustrations, roentgenograms and microphotographs embellish the text. This book can be recommended to anyone interested in the subject of vascular surgery.

—PHILIP THOREK, M.D.

Personality and Nature in Modern Medicine. By Franz Buchner. New York and London: Grune and Stratton, 1958. Pp. 36.

This brief but thought-provoking essay, excerpted from the author's book The Spiritual Standpoint of Modern Medicine (Freiburg in Breisgau, Germany: Hans Ferdinand Schultz, Publisher), was presented as the Festival Lecture on Faculties Day at the Fifth Centennial of the University of Freiburg in Breisgau on June 27, 1957. Those already familiar with Dr. Buchner's philosophic profundity will welcome this expression of it from the medical point of view; those not acquainted with his work have a pleasant surprise in store.

Reflecting on the origins of human disease, Dr. Buchner presents two possibilities: (1) that disease is inherent in the natural premises of human life and represent part of the vulnerability and perishability of physical existence, and (2) that disease is the result of man's freedom, "the result of his individual biography"—i.e., the fruit of his neglects and inhibitions, his follies and excesses. From these two postulates, which he considers in turn, he proceeds to a penetrating consideration of the human body in relation to the human soul. The close-woven interrelations of soma and psyche are explored. That some diseases and disturbances are psychosomatic is taken as a matter of course today; Dr. Buchner carries this acceptance to the point of inquiring whether the true reality of human existence is not represented by the soul, the body being only its symbol.

This speculation, in one form or another, is almost as old as the human race itself, for no subject is more fascinating to the meditative mind. No definitive answer, of course, can be given, but this, in Dr. Buchner's opinion and that of many other philosophers, does not alter the fact that modern medicine is challenged to neglect neither the one part of the human entity nor the other, since enough has been learned of man's nature to establish their interdependence. The essay closes with the only conclusion thus far possible: ". . . it remains the great task of scientific medicine to search with renewed interest for the essence of human 'bodiliness' and to regard man as a unit of body and soul, a task indispensable for the self-realization of man."

—M. T.

Tuberculosis: Prevention and Control. By H. W. Hetherington and Fannie W. Eshleman. New York: G. P. Putnam's Sons, 1958. 4th ed. Illustrated with photographs and charts.

Revised, reset and retitled, this fourth edition of a classic work takes cognizance of the increasing importance and success of preventive measures conducted through public health service. The authors see the care of the tuberculous patient as no longer a matter for the specialist only, but one for the physician, the family and the clinic. The development of chemotherapy, they point out, has shifted a great deal of responsibility to members of the nursing profession to persons working in dispensaries and to those engaged in family visiting services. The book is intended primarily for these groups but should be noted also by welfare organizations and physicians in communities where public service is restricted.

—O. C.

Reflux Oesophagitis. By J. G. Ton. Uitgeverij: Born, N.V. Pp. 116, with 31 illustrations.

Reflux esophagitis remains an intriguing and challenging subject. Dr. Ton has written a monograph that should be read by practitioner and specialist alike. As Prof. Boerema has correctly stated in his foreword to this book, esophagitis has been neglected in many modern textbooks. A most provocative and logical discussion of the so-called cardiac sphincter is presented. It is further interesting to note that the terms "peptic esophagitis," "reflux esophagitis," and "peptic ulceration of the esophagus" are looked upon as different aspects of the same disease. The author has the ability to condense much practical material into a few sentences. In a most pithy way he discusses the tetrad of symptoms of this condition, namely, pain, dysphagia, hemorrhage and regurgitation. The text is amplified by clearly depicted illustrations. The author has done a herculean task in assembling the 520 references that appear at the end of the book. This book can be recommended most highly to anyone interested in the subject of reflux esophagitis.

—PHILIP THOREK, M.D.

Third Biennial Conference on Charitable Foundations. New York: New York University Press, 1957.

New York University established its Conference on Charitable Foundations in 1953. The second session was held in 1955 and the third in May 1957. The purpose of the conference is to provide a recurring forum for persons interested in the purposes, functions and problems of foundations.

These published proceedings represent the papers read at the 1957 conference, mostly by active workers for foundations. Subjects discussed were fields of activity; problems in the making of grants; administration; law, and taxes. Each paper was followed by a question-and-answer period, the gist of which is reproduced here.

Here is the latest thought on all these matters, and the volume should prove valuable to all who are interested in the conduct of foundations.

—O. C.

Milestones in Modern Surgery. Edited by Alfred Hurwitz and George A. Degenshein, with a foreword by J. Engelbert Dunphy. New York: Paul B. Hoeber, Inc., 1958. Pp. 520. Illustrated.

The glorious history of surgery—the work and lives of the men who in the past hundred years have developed the healing art to its present scientific level—reads like romance. It *is* romance, as exciting in retrospect as in the limitless horizons this groundwork is pushing back for the future.

This volume comprises the original papers of the "greats" in surgery, a galaxy of such shining lights as Auer, Billroth, Carrel, Crile, Fleming, Paré, Reid, Singer and some thirty others.

There are twenty-eight "milestones" in all, presented under 13 headings: *Hemostasis, Anesthesia, The "Milieu Intérieur," Wound Healing, Head and Neck Surgery, Breast Surgery, Hernia, Gastrointestinal Surgery, Intestinal Obstruction, Thoracic Surgery, Cardiovascular Surgery, The Soul of the Surgeon,* and *Milestones on the Horizon.* It is profusely illustrated. Each section is preceded by a brief prefatory history of the development in that field, with biographical notes and a photograph of the surgeon whose paper is presented. In each case the editors have chosen the paper which, in their judgment, is the most significant in that field. A second criterion was that the paper be well written and that it demonstrate the scientific method. The last rule governing the choice was that the principle or operation described, whether in its original form or some variation thereof, is still of current value.

Consequently, this collection of papers is not only of current but of lasting worth and is a milestone in itself. Every surgeon who is devoted to his art and to the advancement of surgery should own and read this book.

MAX THOREK, M.D.

Abstracts from Current Literature

Survey of the German Literature on General and Orthopedic Surgery since 1956*

PROF. K. BOSHAMER, M.D., F.I.C.S.
WUPPERTAL-BARMEN, GERMANY

TRANSLATED BY
KURT EICHELBAUM, M.D., F.I.C.S.
CHICAGO, ILLINOIS

Spinal Column.—According to Meisenheimer, Schanerman's disease is related to congenital disturbances of subchondral ossification. These lesions, according to him, do not have the character of aseptic necrosis but are disturbances of ossification in the area of the vertebral and plate, which consists of hyaline cartilage. Lindeman and Rathdke discuss atypical phytosis occurring in the adolescent, which show a striking narrowing of the intervertebral disk. In their opinion, a congenital disturbance, such as aplasia of the disk or underdevelopment of the chondra, may be responsible for the narrowing of the disk. Jentschura ascribes scoliosis in the newborn, at least in a certain number of cases by fixation of habitually assumed postures in the presence of poorly developed connective and fibrous tissue. Muscular contractures eventually cause the spinal deformity in which rickets and too much weight bearing by the small vertebral joint play important roles. Lange emphasizes the influence of disturbances of the inner secretory system on the development of so-called idiopathic scoliosis. Just prior to the progression of the deformity, which always takes place about the time of puberty, lesions of the epiphyses and local osteoporosis can be demonstrated. Changes in the protein metabolism and increased nitrogen discharge point to a disturbance of function of the adrenal glands.

In the conservative treatment of scoliosis, the essential purpose of which is to prevent further deterioration, the active muscle-strengthening therapy is superior to passive correction, according to Jacoby and Penners. If, however, this type of treatment does not prevent further progress of the deformity, Lange considers operation indicated — not, however, until the patient is 14 years old. Lange reports his experiences with a span onlay and fusion of the facet joints, emphasizing the importance of the correct choice and pretreatment of the section to be fused.**

Schramm recommends the pillar plasty of Schade. Fixation of the spinal column with two plates similar to a Lane plate, combined with a span according to Reimers, is not accepted by Lange.

Spondylolisthesis in the vercila section of the spine is rare. Schlueter and Lissuer add 3 recent cases to the literature. In their opinion, hysplasia of the vertebral arch is the cause of this condition. In Brocker's, dysplasia of the arch is hereditary and is the decisive factor. Haubery and Schlueter are convinced that the treatment of this condition should be conservative if the cervical portion of the spine is stable and the nervous system intact;

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*Continued from April issue.

**If by "pretreatment" correction of the deformity is meant, the review does not say so.—*Translator.*

in the case of instability and symptoms of root compression, however, fusion of the cervical portion of the spine by means of a bone span is indicated. The success of this procedure—75 per cent excellent results, and 20 per cent good results—is convincing.

In 3 cases, Forstmann has observed infectious spondylitis after injury of the anterior longitudinal ligament by a fragment of a grenade and paravertebral infection respectively. He has observed extension of the infectious process over fourteen vertebral bones. Both disk and vertebral body were involved, without defects or abscesses.

In roentgen diagnostic study of the spinal column, views showing the entire column gain more and more importance in the diagnosis of function. Schlegel and Leger discuss the particular technic.

The atlanto-occipital juncture is attracting increased attention in roentgen examination of the cervical portion of the spine. Decker, Fischgold and others, in a paper published by the department of Neurology of Munich in cooperation with the Department of Neurology of Paris, show that in order to demonstrate developmental disturbances in this area every roentgen technic (tomographic study, gas myelographic investigation and views demonstrating function) must be employed. Compression at the base and assimilation of the atlas are often merely coincidental. Dickmann and Rohn describe the fullblown neurologic picture of compression of the medulla and also that of compression of the cerebellum, blockage of the spinal fluid and stretching of the nerves of the brain. The treatment is surgical decompression by resection of the arch of the atlas, and possibly resection of the arch of the second cervical vertebra, with enlargement of the foramen magnum and incision of the dura. Nachtwey, Schliak and Rohr describe the symptoms of these changes and, in addition, the occipital vertebral manifestation and the isolated os odontoideum. The significance of the small vertebral joints and of the hemijoints of Luschka, as well as the importance of the course of the vertebral artery in relation to the cervical spinal syndrome, is emphasized (Brocher, Kuhlendahl, Primbs, and Weber), while, according to Hardt and Tepe, spondylosis and osteochondrosis are frequently symptomless. Sprung discusses the physiopathologic aspects of the intervertebral foramens. The obliteration of the root sleeves in this area may account for circulatory disturbances. According to Teichert, skeletal elements derived from the lower orders of the vertebrates may stimulate pathologic changes in the upper cervical portion of the spine. Brocker calls the calcification of the interspinous ligament associated with osteoarthrosis of the spinous processes "calcinosis cir-

Through the unfailing kindness and cooperation of Prof. Dr. K. Boshamer, F.I.C.S., we are able to make available to Journal readers the second section of a comprehensive outline of surgical progress in Germany since 1956. Prof. Heinz Griessmann of Neumeunger-Holstein summarizes the literature on esophageal surgery; Prof. Dr. Otto Kingreen, F.I.C.S., of Ludenscheid, that on traumatic surgery. Orthopedic surgery is presented by Prof. Dr. Hans Galli of Munich.

The literature from which the material was selected included all significant publications, whether periodical or in the form of books, monographs or Proceedings, to appear in Germany during the period chosen. The compilers have made an excellent selection and presented the facts concisely. The Journal warmly appreciates this timely and valuable contribution. To Prof. Boshamer, who by initiating the work has added another distinguished achievement to his long record of dedicated service to the College ideal of world-wide dissemination of the latest in surgical knowledge, we extend our sincere thanks and congratulations.

cum scripta nuchal." Rents of the anterior longitudinal ligament have a serious prognosis, because damage to the cord is frequently connected with this injury.*

The necessary reduction should be done by a closed procedure without general anesthesia, i.e., by slow steadily increased traction, followed by surgical stabilization. In the lumbar area Barthman suggests resection of the spinous processes if they present osteoarthritic changes, as, in his opinion, they frequently do in persons of middle and advanced age.

Glauner and Marquardt, in their book *The Roentgen Diagnosis of the Hip Joint,* discuss the normal hip joint, its development and its pathologic aspects. The illustrations are very good.

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*Obviously it is the possible vertebral dislocation due to such injury that accounts for the damage of the cord.—*Translator.*

Abstracts of Papers Presented at the Eighth Annual Congress of the Austrian Section, International College of Surgeons, Vienna, Oct. 18, 1958

Pelvic Osteotomy for Roof of the Acetabulum

K. CHIARI, M.D., F.I.C.S.

For repair of the roof of the acetabulum surgical intervention is advised for children beyond the fourth year of life, since a spontaneous development of the roof of the acetabulum cannot be expected.

The best known of these methods are those advocated by Spitzy and Lance. They make possible the creation of a roof for the acetabulum by bone transplantation which by proper conditions of weight bearing can be rebuilt into a good support for the head of the femur. Even with the formation of a good roof, however, the pathologic position of the femoral head cannot be influenced, so that the insufficiency limp is often maintained even after a successful operation.

A new surgical method has been developed, which results in the formation of an acetabular roof and in correction of the position of the femoral head by the tendency toward a medial shift at the same time.

The method is as follows: An osteotomy of the pelvic isthmus is performed just above the insertion of the capsule of the hip joint. After the performance of an extra-articular osteotomy the hip joint is shifted medially by abduction. Technic and results of the surgical procedure are demonstrated by film.

Thus far the operation has been performed in 58 cases. In 32 cases surgical intervention was indicated by luxations that were treated without open reduction according to Lorenz. This led, however, to an insufficiently developed socket with a tendency to recurrent luxation.

In 10 cases, children beyond the age of 4 years were admitted with complete luxations and without previous treatment. In these instances the hip joint was reduced without surgical intervention. Most of them had to be first immobilized in Lorenz' primary position for two months. Afterward, the position of the hip joint was changed into abduction and internal rotation. After two more months the pelvic osteotomy, with formation of a roof for the acetabulum, was performed. In the remaining 16 cases there were subluxations of moderate degree with flatness of the socket, which during infancy had caused neither subjective nor objective symptoms.

The ages of the patients were between 3 and 19 years. More than three-fourths of the patients were under 12 years of age.

The results of the operation can be designated as favorable. Of the 58 operations, 41 were done more than a year prior to the time of writing, and the results in 31 instances can be classified as very good. The requirements were complete mobility of the hip joint, normal gait and a negative Trendelenburg phenomenon. Nine patients were improved. The principal remaining difficulties are a moderate limp, insufficiency and, in a few

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**Chief of the Orthopedic Department of the First Surgical Clinic, Vienna, Prof. Dr. L. Schoenbauer, Chairman.

cases, moderate limitation of mobility. In only 1 case can the result be considered unfavorable. The reason for the less favorable results consisted, in 2 cases, of an insufficient dislocation of the hip joint medially. In most of the other cases the incomplete success was due to unfavorable conditions existing prior to surgical treatment. Especially to be mentioned here are antirotation of the neck of the femur and changes in the femoral head prior to the operation. In the case in which the result was designated as poor, there was severe coxa valga, the correction of which was performed recently.

The patients with a five-year interval after the operation show steady, good function. In 1 boy an ideal acetabular roof was rebuilt spontaneously and has remained without unfavorable changes for the past five years in spite of the boy's engaging in sports.

Since the majority of the patients were girls, the transverse narrowing of the pelvis due to the operation seemed important. It can be shown by several diapositives that the pelvic entrance, after considerable initial narrowing, seemed to widen again spontaneously by resorption of the bony spike in the inner part of the pelvis. It is to be hoped that at least some of the girls who underwent the operation may later be delivered spontaneously. Up to the time of this report 3 patients have been operated on bilaterally. The second surgical intervention was requested by the parents after the successful operation of the first side. In these cases the probability of an eventually necessary cesarean section was emphasized.

A higher age limit is indicated if arthrosis deformans is already in the process of developing. It would influence the result unfavorably. About 20 years of age is considered the upper limit.

In a 17-year-old girl, that one year after undergoing an operation for a high grade subluxation, reveals a highly favorable result both clinically and roentgenologically.

Conclusion. — The operation, within the aforementioned limits of indication, can be recommended. It has the advantage that without bone transplantation a strong acetabular roof can be formed. Immobilization in a cast is maintained only four weeks. The mobilization requires only a short stationary after-treatment. Function is gained quickly. The after-treatment consists mainly of active exercise to strengthen the insufficient gluteal muscles.

Treatment of Scoliosis

F. MEZNIK, M.D.

There are certain common principles in the conservative and surgical treatment of the different kinds of scoliosis. Although scoliosis in the overwhelming majority of cases must be approached conservatively, it must be pointed out that the only moderately slow progressive course in most cases is not the result of the therapy. This holds true first of all for idiopathic scoliosis. Of all conservative methods of treatment the combined symnastic-posterior plaster mold seems to be most justifiable. Even if no prominent correction can be expected from this approach, the entire body is strengthened and the patient only moderately burdened. Braces are indicated only in the presence of severe paresis-scoliosis when operation is not undertaken. An important point of any conservative treatment for scoliosis is roentgen control, in order to arrive at an objective estimate of its progress, in order to determine the proper time for intervention.

As to the surgical approach, in my personal experience the method employed by Cobb of New York offers good possibilities of correction. By means of the turnbuckle jacket and by careful approach, the correction is well maintained by the stiffening of the dorsal vertebrae. Operation is indicated for severe paresis-scoliosis, rapidly progressive idiopathic variations and scoliosis accompanying neurofibromatosis.

Treatment of Osteolytic Disease

F. ENDLER, M.D.

The ideal conditions nowadays generally expected of early treatment of the primary osteomyelitic diseases are encountered in only a limited number of cases.

With regard to general treatment as the only therapeutic approach, there are doubts as to its efficiency, especially if treatment is not started during the first few days or if there is a polyvalent resistance of the pathogenic bacteria to the available antibiotics. The *indications for surgical intervention*, the extent of the operation and the role of antibiotic local treatment in the therapy are discussed elsewhere.

As to the chronic form of osteomyelitis, it has become obvious that the usual extensive evacuation of the involved focus does not always result in permanent cure and that this approach is contraindicated in cases of extreme extension and for patients in poor general condition. Within the scope of these problems, a personal approach to the local treatment of acute and chronic infections has been devised, consisting of intraosseous and periosseous continual installation. Started in 1948, this procedure has been used in about 300 cases with good results. In order to achieve the strongest antibacterial effect, the arrangement of the intraosseous and periosseous passage of the installation in the entire diseased bone and the surrounding soft tissue is of the utmost importance. In addition, continual installation for several weeks and a change to antibiotic and sulfa drugs to which the offending bacteria are sensitive are mandatory. If a necrotic process should develop, the addition of tryptic ferments to the infusion has proved useful. The different questions have been comprehensively illustrated by a large number of diapositives.

Discussion.—Acute hematogenous osteomyelitis urgently demands immediate hospitalization, in a surgical ward, in order to prevent transition into the chronic form by intensive antibacterial treatment.

Progress of the pathologic process in the bone marrow becomes evident radiologically and indicates the time when surgical evacuation of the infected bone marrow is necessary. With a few exceptions healing of the wound, closed without leaving a drain, took place per primam.

Chronic osteomyelitis also needs surgical evacuation, since the bone marrow constitutes the abscess, and after its removal the abscess membrane, in this case the bone, will also heal.

There is no interference with the growth of the bone in any case of infantile, acute or chronic osteomyelitis, since the growth does not take place in the marrow but in the corticales of the epiphysis.

Investigations of local applications of antibiotics proved unsuccessful. They required a long stay in the hospital, while radical evacuation of the bone marrow resulted, in most cases, in *restitutio ad integram* in a few weeks.

Failure of postoperative healing is almost always correctible.

The conservative approach to the chronic form of the disease can result only in remissions at variable intervals and of variable duration. Burkle de la Camp described a case of recurrence after 52 years and Krafft reported recurrence after 32 years.

Only radical evacuation of the infected marrow can cure chronic osteomyelitis.

According to 103 personal cases, closely observed, this therapy, started in 1952, is justified.

Disturbance of healing, which may occur with this therapy, is attributable to poor technic or to the presence of B. Proteus pyocyaneus.

I am definitely in favor of surgical evacuation of the diseased bone marrow.

Muscular Tonus-Asymmetry as Cause of Abnormal Manifestations of the Lumbar Portion of the Spine*

HERBERT MOSER, M.D., F.I.C.S.**

A hypertonic asymmetric pull of the psoas muscles leads to an abnormal appearance at the site of the lumbar portion of the spine. Pain develops. Gradually small spikes are formed, which are not the symptoms of spondylosis but denote the structural adaption of the bone in response to the nonphysiologic pull at the site of the insertion. At the same time, the lumbar portion of the spine becomes tilted with the concavity to the diseased side.

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*Review and excerpts of a lecture on this topic.

**Professor of Surgery.

In addition to the roentgen and pathologic signs, pathologic hypertonus of the psoas muscle reveals the following clinical symptoms:

1. The psoas of the one side is painful on touch of the lower part of the abdomen, and also hardened. The examination is performed while the stretched leg is raised with the patient supine.
2. The point of insertion of the psoas at the trochanter minor is painful on pressure at the end phase of outer rotation of the thigh with the leg flexed and abducted and the patient in the supine position.
3. The points of insertion of the psoas at the lumbar portion of the spine reveal pulling pain during the end phase of internal rotation of the abducted and overextended leg with the patient prone.

The roentgen signs, together with the typical painful points during certain functional phases, constitute the psoas syndrome.

This syndrome is also associated with intraabdominal diseases, especially of the small pelvis, in which the psoas is included directly or by reflex reaction; frequently it persists, even after the intraabdominal process has ended, and may become a source of possible false diagnosis. The psoas proper may be affected primarily, like other muscles, by rheumatism. The unilateral hypertonus may be the consequence of static causes that burden the psoas of one side more than that of the other. Owing to this long-lasting overcharge the muscle shows gradual changes, functionally and reflectively as well as anatomically. Changes resembling myositis are possible. The slow and long lasting developmental process of myositis contrahens may lead to a contraction of the psoas, with a corresponding shortening as the end stage.

The treatment of unilateral painful spasm of the psoas consists of relaxation. Removal of general or localized pathologic change is the first step. Relaxation is achieved by infiltration of the psoas tendons at their sites of insertion with derivatives of procaine (reports of 42 conservatively treated cases). In case of advanced contraction of the psoas two surgical methods were employed; as the method of choice, infra-inguinal isolated tendotomy of the psoas, and, alternatively (for short and adipose thighs), suprapubic myotomy of the psoas. In both procedures the psoas muscle is isolated and the iliacus muscle carefully spared. This results in a steplike elongation of the entire iliopsoas muscle, and relaxation is accomplished, with preservation of the essential function (report of 5 cases in which surgical treatment was employed).

Unilateral Double Fracture of the Lower Extremity: Treatment and Results

GEORG SALEM, M.D.

The increasing prevalence of automobiles, and especially the increase in their velocity, has resulted in more and more serious accidents. It is the goal of the surgeon not only to save lives but to restore the most nearly complete function, in the shortest possible time, to the injured extremities.

In the scope of this presentation a special type of injury was discussed, the technic of treatment of which is somewhat problematic, namely, unilateral double fracture of the lower extremity.

In such an injury one has to deal mostly with a closed femoral fracture and a compound fracture of the lower part of the leg, and lacerations of the soft tissue may be extensive. In 2 cases not described in this presentation, there was traumatic amputation of the lower part of the leg on the patients' admission to the hospital.

According to the records of 15 cases comprehensively reported from 1950 to 1958 from the emergency department of the Second Surgical University Clinic in Vienna, it was shown that, by closed marrow nailing of the femur fractures, a considerable facilitation of treatment and especially good results could be achieved.

Owing to progress in technic and increased experience, it is nowadays possible to employ the closed method successfully even in nailing communited fractures of the femur by the closed method.

After completed osteosynthesis of the femur, further treatment of this type of injury is already facilitated. Full attention can now be given to treatment of the injuries in the soft parts and the fractures of the lower part of the leg.

For immobilization of the fracture of the lower part of the leg only one cast of the thigh is required, and after stability of the femoral osteosynthesis is beyond question, weight bearing is begun four to six weeks after the accident.

Recently, in 2 severely injured patients (still under treatment), a few days after marrow nailing of the femoral fracture, there was also applied to the tibia fracture the Rohrschlitz nail of Herzog, and no fixation bandage was required.

Discussion (H. Spaengler, M.D.).—The increase of severe accidents due to the steadily increasing use of motorbicycles should also be emphasized. In this connection double fractures of the lower extremities are encountered more frequently and consequently demand special interest, since their treatment involves great difficulties. At the Emergency Clinic of the First Surgical University Clinic from 1953 to 1958, 33 double fractures were treated, and this total includes only those cases in which the thigh was also involved.

The double fractures treated are divided into 2 groups, the first consisting of shaft fractures of the femur and tibia only and the second group comprising all double fractures associated with multiple fracture of the lower part of the leg.

In children up to 16 years of age extension treatment, combined eventually with additional immobilization by means of a plaster splint or a cast, gives satisfactory results.

In adults, if at all possible, early osteosynthesis of the femur by nailing is recommended, in order that the surgeon may attend as soon as possible to the reduction and fixation of the lower part of the leg.

Osteochondritis Dissecans

ROBERT JELINEK, M.D.

There are many theories about the development of osteochondritis dissecans, but the actual cause is still unexplained. In the full version of this paper the different names used in the literature for the designation of this disease are enumerated and the special features of oseochondritis dissecans pointed out, e.g., its appearance in the long bones as typical localization. Forty-nine cases of osteochondritis dissecans of the knee joint are reported, with treatment over a period of eleven years in the surgical department of the Kaiser Franz Josef Hospital, with the observation that this disease is not confined to youth but may also occur after growth has been concluded. The four stages of osteochondritis dissecans are: (1) necrosis; (2) sequestration or dissecation; (3) formation of free bodies, and (4) the successive stages of healing.

Furthermore, the original cause is discussed, which may contribute to clarification of the etiologic problem. Cases are mentioned in which the clinical picture was that of osteochondritis dissecans but in which the roentgen appearance was normal and operation revealed changes only in the cartilage, without the osseous involvement usually expected in cases of this disease.

A new investigation is mentioned, dealing with regeneration of the cartilage, and an attempt is made to explain the development of this isolated cartilaginous change resembling osteochondritis dissecans. It is emphasized again that the bone in such cases is unchanged. According to these investigations, damage of the superficial zone of the cartilage means the destruction of regenerative potency. Destruction of this zone would also explain the disease of the cartilage, which would be deprived of the enzyme-carrying layer so vital to its nutrition.

The therapy of osteochondritis dissecans is discussed. Conservatism is stressed; surgical treatment is reserved for cases in which no cure can be expected as a result of the conservative approach. Prognostically, osteochondritis dissecans is considered a benign curable disease, although the process of healing is slow.

Discussion (A. Prieschnik, M.D.).—Examinations of 1,541 senile joints show an extremely frequent occurrence of cartilage and bone changes described by Koenig as characteristic osteochondritis dissecans. They are located at characteristic sites, grow in typical

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From the Surgical Department of the Kaiser Franz Josef Hospital, Prof. Dr. Herbert Kraus, Chairman.

directions, are usually multiple and regular in localization. There exists a wide discrepancy between the morphologic and the clinical signs in the joints of persons over 65 years of age. This personal material permits several conclusions as to pathogenesis; one of these, favoring the genetically important observation of the speaker, is that frequently only the cartilage is involved. The extent to which old established clinical opinions must be revised is indicated by the demonstrated fact that changes occurring at the elbow, hip, knee and ankle joint are located at sites in which the joints are least subjected to wear and tear.

Surgery of the Umbauzonen

G. MOCHACEK, M.D.*

This paper deals with the Umbauzonen. Strictly speaking, this means with exclusion of changes taking place at the epiphysis. Clinically, the site of hardest wear presents a picture characteristic of painful periostosis. Radiologically it shows a bandlike translucency; the bone structure at the site involved is lost. Anatomically it means replacement of bone tissue by connective tissue, cartilage or osteoid tissue. Permanent fracture, overload, damage, and fatigue fracture, synonyms for the same pathologic picture, are included in the term, since fundamentally, in these conditions, the pathogenesis of Umbauzonen exists.

Umbauzonen are dealt with separately, according to whether they involve healthy or sick bone. The differentiation has proved valuable in consideration of the varying clinical course.

The clinical symptoms are variable. Callus formation, duration of healing, localization, and the influence of force in healthy and sick bone are discussed in the full version of this presention. Mention is made of those diseases in which Umbauzonen are observed, and those Umbauzonen which develop as a consequence of treatment are described.

A skeleton scheme, marking of the possible locations of Umbauzonen, is presented, together with pictures of Umbauzonen in a healthy and a diseased skeleton, Umbauzonen occurring as a consequence of treatment, and the surgical therapy of Umbauzonen. Prophylaxis and treatment are also discussed. Therapy is mainly conservative and consists of strict immobilization. In the presence of diseased bone, treatment of the fundamental illness is mandatory.

The treatment of osteoporosis with hormones, which exert an anabolic effect, is emphasized. In a few exceptional cases, surgical intervention is indicated.

Too little is known even yet of the nature of the Umbauzonen, the most common source of false diagnosis with regard to osteomyelitis and sarcoma.

Unnecessary and disastrous interventions can be prevented with better knowledge of the clinical picture of the Umbauzonen.

Thromboembolism: Prophylaxis with PH 203**

ERIC RAPPERT, M.D., F.I.C.S.

The danger associated with thromboembolism cannot be measured by laboratory methods. One can estimate it only from comprehensive statistics (Wenzl-Kuehlmayer, Rappert). Different prophylactic methods are available against thrombosis. Preoperative, operative and postoperative measures are used everywhere nowadays. Of the specific methods only the Dicoumarine derivatives and Panthesin are useful, according to present experience. The two are about equally valuable. The number of postoperative hemorrhages is increased fourfold by use of the anticoagulants; time-consuming laboratory controls are necessary, which makes these rather unsatisfactory. The use of PH 203 dispenses with laboratory controls; there is no tendency to hemorrhage; serious incidents have never been observed, and there is no known contraindication. Of about 3,400 patients, 2 surgical patients and 3 urologic patients had fatal embolisms (0.15 per cent). This is a result unsurpassed by any other method up to the time of this report.

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*Oberarzt, Orthopedic Clinic, Vienna

**Presented in detail in Clinical Medicine

IMPORTANT ANNOUNCEMENT

Contributors of scientific articles for publication in The Journal of the International College of Surgeons from Europe, the Near East and the Middle East should send their articles to:

European Office of the
International College of Surgeons
6-8 Rue de la Confederation
Geneva, Switzerland

A special committee has been appointed to evaluate the papers submitted for publication. The Journal publishes summaries in English, French, German, Spanish, Italian and Portuguese. Summaries of articles should be included in as many of these languages as possible.

AVIS IMPORTANT

Les auteurs d'articles scientifiques destinés à être publiés dans le Journal du Collège international de chirurgiens sont priés d'adresser leurs articles à l'adresse suivante pour l'Europe, le Proche et le Moyen Orient.

Bureau Européen du
Collège international de chirurgiens
6-8 rue de la Confédération
Genéve (Suisse)

Un comité a été nommé pour l'examen des articles à paraître. Les auteurs sont priés de joindre à leur travail de brefs résumés en français, anglais, allemand, espagnol, italien et portugais si possible.

The following pages comprise

Section II

the BULLETIN

of the

Journal

of the

International College of Surgeons

GENÈVE '35
COLLÈGE INTERNATIONAL DE CHIRURGIENS
FOUNDED BY DR. MAX THOREK

Twenty-Fourth Annual Congress
North American Federation
International College of Surgeons

Palmer House

Chicago, Illinois September 13-17, 1959

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The Journal of the International College of Surgeons

Vol. 31, No. 5 SECTION II May, 1959

BULLETIN

Embodying Activities of the World Federation of General Surgeons and Surgical Specialists, Section News and Comments

Editor-in-Chief—MAX THOREK, M.D.
Associate Editor—PHILIP THOREK, M.D.
Consulting Editor—MORRIS FISHBEIN, M.D.
Assistant Editors—*DOROTHY LANGLEY AND HELEN WEISS*

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COLLÈGE INTERNATIONAL DE CHIRURGIENS

FOUNDED BY DR. MAX THOREK

Twenty-Fourth Annual Congress
North American Federation
International College of Surgeons

Palmer House

Chicago, Illinois September 13-17, 1959

The North American Federation Comprises

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Vol. 31, No. 5 SECTION II May, 1959

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These, together with the secretaries and

other officers of their Sections, are making plans for participating in the Congress.

The Program

The basic task of organizing the program of the Congress is the responsibility of the General Program Committee.

The committee is headed by **Dr. Peter Rosi,** F.A.C.S., F.I.C.S., of Chicago, a veteran chairman of the programming committee, who has ably served, in that capacity, both the United States Section and the International College. Dr. Rosi is associate professor of surgery at Northwestern University Medical School; professor of surgery at Cook County Graduate School, and an attending surgeon on the staff of the Chicago Wesley Memorial Hospital.

The other members of the General Program Committee are:

Dr. Charles S. White, F.A.C.S., F.I.C.S., of Washington, D. C.
Dr. John B. O'Donoghue, F.A.C.S., F.I.C.S., of Chicago
Dr. William G. Stephenson, F.A.C.S., F.I.C.S., of Chattanooga, Tennessee
Dr. Arnold S. Jackson, F.A.C.S., F.I.C.S. (Hon.), Madison, Wisconsin
Dr. Harold O. Hallstrand, F.A.C.S., F.I.C.S., South Miami, Florida
Dr. E. N. C. McAmmond, F.R.C.S., F.I.C.S., Vancouver, B. C., Canada
Miss Laura Jackson, B.S., M.I.C.S. (Hon.), Chicago, Congress Consultant

The Specialties

Of outstanding importance in the organization of the Congress is the work of the committees on programs for the specialties.

The specialties to be represented on the Congress program are:

Colo-Proctologic Surgery
Neurologic Surgery
Obstetric and Gynecologic Surgery
Ophthalmologic Surgery
Oto-Rhino-Laryngologic Surgery
Orthopedic Surgery
Plastic and Reconstructive Surgery
Surgery of Trauma and Rehabilitation
Urologic Surgery
Film Forum and Surgical Motion Pictures
Surgical Nurses' Program

The Social Program

The Woman's Auxiliary, too, is arranging for meetings and social occasions in conjunction with the Congress. Plans for the Convocation and the banquet are also maturing.

The Congress

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FOR HOTEL RESERVATIONS
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NEWS ITEMS CONCERNING SECTION AND REGIONAL ACTIVITIES
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Comments by the Founder

INTERNATIONAL ASPECTS OF NORTH AMERICAN FEDERATION CONGRESS

Dr. Max Thorek

With the growth of the International College of Surgeons and the increase in the number of National Sections there arose the need for an intermediate form of organization. The completely logical and functionally effective grouping of Sections into Continental Federations naturally suggested itself and has proved to be a most useful and inspiring arrangement.

We recall with pride the epoch-making First Congress of the European Federation of the International College of Surgeons held in Brussels in May of last year. It was a stupendous undertaking and an outstanding success.

And now we look forward eagerly to the great Congress of the North American Federation which will take place at the Palmer House in Chicago, September 13-17, 1959.

There is pleasure in the sound of the sonorous names of the Sections that constitute the North American Federation of the International College of Surgeons. They bring home the divergencies and the vastness of this continent, the plurality of ethnic and cultural origins, the historical influences that have molded its various parts and yet created a unity of purpose and of spirit.

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Max Thorek

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Ophthalmologic Surgery
Oto-Rhino-Laryngologic Surgery
Orthopedic Surgery
Plastic and Reconstructive Surgery
Surgery of Trauma and Rehabilitation
Urologic Surgery
Film Forum and Surgical Motion Pictures
Surgical Nurses' Program

The Social Program

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Comments by the Founder

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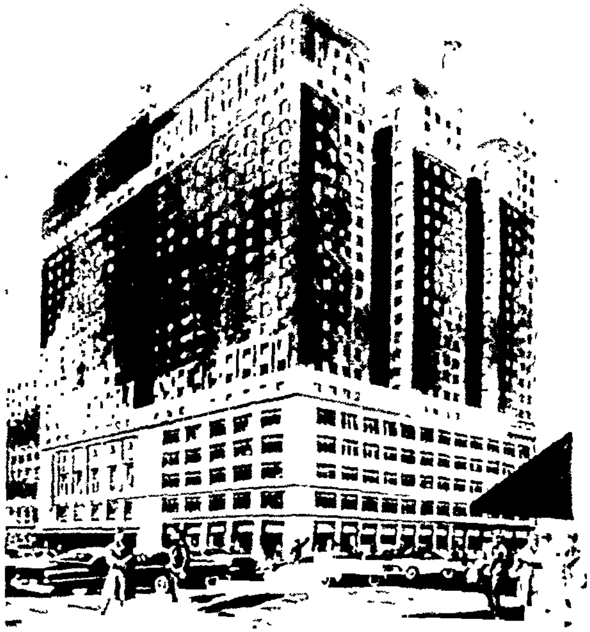
PLAN TO ATTEND

TWENTY-FOURTH ANNUAL CONGRESS
NORTH AMERICAN FEDERATION
(Canada, Mexico, U. S. and Central American Sections)
INTERNATIONAL COLLEGE OF SURGEONS



PALMER HOUSE—CHICAGO
Congress Headquarters

September 13-17, inc., 1959

For information regarding preliminary program and reservations, etc. address:

Secretariat
International College of Surgeons
1516 Lake Shore Drive
Chicago 10, Illinois

APPLICATION FOR HOTEL RESERVATIONS

TWENTY-FOURTH ANNUAL CONGRESS

North American Federation
(Canada, Mexico, U. S. and Central American Sections)
INTERNATIONAL COLLEGE OF SURGEONS

PALMER HOUSE — CHICAGO

Congress Headquarters
September 13, 14, 15, 16, 17, 1959

Note: The headquarters hotel is reserving a sufficiently large block of rooms for those who will be attending the Congress. However, early reservations are necessary to hold this block of rooms.

PALMER HOUSE

Single Rooms	Double Rooms	Twin Rooms	Parlor and 1 Bedroom
$8.00 and up	$15.00-$22.50	$16.00-$24.50	$40.00 and up (1 person)

Mail to: ROOM RESERVATIONS
THE PALMER HOUSE
CHICAGO 90, ILLINOIS

Please make the following reservation for the 24th Congress of the International College of Surgeons:

Single Room	Double Rooms	Twin Rooms	Parlor and 1 Bedroom
$ to $	$ to $	$ to $	$ to $

Arriving a.m. or p.m. Departing a.m. or p.m.

Please include the names of all persons who will occupy rooms requested

Confirm reservation to:

International College of Surgeons

FOUNDED BY DR. MAX THOREK
(GENEVA, SWITZERLAND, 1935 - WASHINGTON, D. C., 1940)
A World Federation of General Surgeons & Surgical Specialists, Inc.
"Instrument of the Free World"

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The pre-publication price for a copy of this important book is $5.50 — after publication $7.50.

We would appreciate your cooperation. Please return the attached subscription blank in the enclosed self-addressed envelope, and oblige

Yours sincerely,

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INTERNATIONAL COLLEGE OF SURGEONS

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Directory Department
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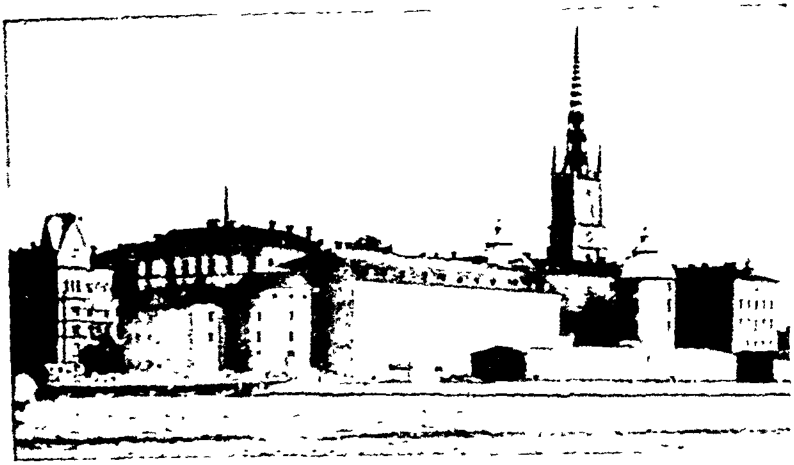

Scene in Stockholm, Sweden

Midsummer European Postgraduate Tour

The Netherlands, Denmark, Norway, Sweden, Finland, Russia, Austria, Germany and France

July 17 - August 27

ROSS T. McINTIRE, M.D., F.A.C.S. (Hon.) F.I.C.S. (Hon.)
TOUR COORDINATOR

This month I wish to call to the attention of the membership a real opportunity for a delightful experience that many of us will have in our tour of the northern European countries. Norway is but one of our stops. It is famous for the beauty of its landscape and is well known as the Land of the Midnight Sun. The fjord country presents scenery on a grand scale, and those of you who will join me on this tour will have ample time to see some of these great arms of the sea. Many are the wonders of Nature that can be explored in the four days we will spend there.

Norway, though a kingdom, is a constitutional democracy, with a recorded history that goes back more than a thousand years and includes the hectic Viking times. When we think of Norway, the name of Henrik Ibsen comes to mind and the names of the great novelists Knut Hamsun and Sigrid Undset, writers who brought great honor to their country by winning Nobel Prizes. Then, too, we have the great composer Edvard Grieg, the painter Edvard Munch and the sculptor Gustav Vigeland. The works of these famous men will be available as we go through their land. And who among Americans has not read the stirring tales of Leif Eriksson, the great explorer who roamed the Northern Seas in One-Thousand A.D.? The modern explorer, Roald Amundsen, is well known to all for his achievement as an explorer in reaching the South Pole in 1911.

Stockholm will be our next stop to see the city and its surroundings. In addition, we will fly to the island of Gotland, where we will have the opportunity of seeing the ancient trading center of Visby, the only remaining walled city in northern Europe.

From Stockholm, we will journey to Helsinki, where we will meet with the Finnish Chapter of the International College of Surgeons, which will be one of the highlights of our tour.

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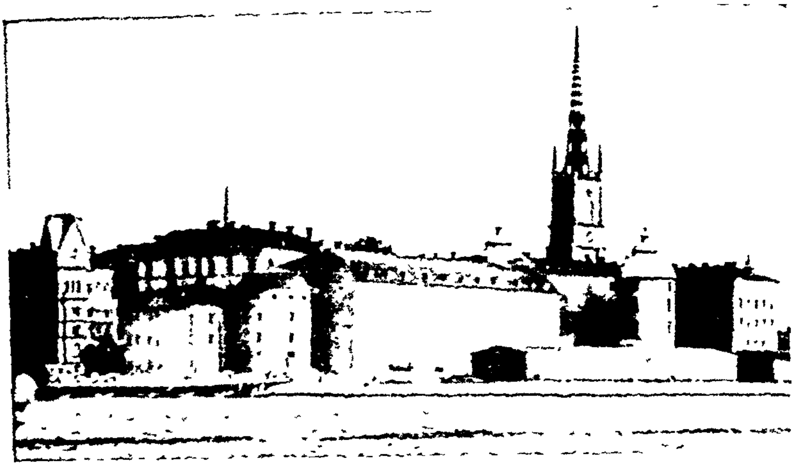

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Postgraduate Courses and Conferences

INTERNATIONAL COLLEGE OF SURGEONS

AUSTRIA

VIENNA

The American Medical Society of Vienna
and
The University of Vienna

Postgradute Courses in Surgical Science Provide Opportunities for Postgraduate Work in Various Fields of Surgery

For information write: Dr. M. Arthur Kline, F.I.C.S., Secretary, American Medical Society of Vienna, 11 Universitätsstrasse, Vienna, Austria.

SPAIN

BARCELONA

Hospital de la Santa Cruz y San Pablo
Surgical Service

Dr. Jose Solar-Roig, F.I.C.S.
DIRECTOR

ADVANCED COURSES IN SURGERY OF THE DIGESTIVE TRACT
(For Postgraduates)
Under the Auspices of the
International College of Surgeons

UNITED STATES

The United States Section

International College of Surgeons
announces its

ANNUAL POSTGRADUATE COURSE

August 3, 1959 — November 2, 1959

The United States Section of the International College of Surgeons will again offer its Annual Postgraduate Course in cooperation with the Cook County Graduate School of Medicine. It will be a two-week intensive review course in General Surgery presented at the Graduate School and in the wards and operating rooms of Cook County Hospital. Because the course has been oversubscribed in previous years, it will be offered twice in 1959.

The program will include illustrated lectures, motion pictures, anatomy demonstrations, operative clinics and practice surgery by the participants on anesthetized dogs. Consideration will be given not only to surgical technic, surgical complications and management of the surgical patient, but also to an intensive review of the basic sciences in relation to clinical surgery. In addition to twenty hours of surgical anatomy on the cadaver, the program will include lectures and demonstrations on the following:

- Gastric Surgery
- Surgical Physiology
- Use of Blood and Derivatives
- Pediatric Surgery
- Surgery of Large Bowel
- Surgery of Small Bowel
- Intestinal Obstruction
- Anorectal Surgery
- Surgery of Pancreas and Spleen
- Vascular Surgery
- Breast Surgery
- Gallbladder Surgery
- Thoracic Emergencies
- Hand Injuries and Infections
- Gynecologic Surgery
- Surgery of Hernia
- Abdominal Injuries
- Surgery of Esophagus
- Thyroid Surgery
- Radioisotopes in Surgery

For further information write to either of the following:

International College of Surgeons
1516 Lake Shore Drive, Chicago 10, Illinois

Cook County Graduate School of Medicine
707 South Wood Street, Chicago 12, Illinois

Professor John Macintyre

M.B.C.M., F.R.F.S.E., F.R.F.P.S., K.St.J., D.L., J.P., LL.D.

1857-1928

WILLIAM JAMES MOORE, M.D., F.R.C.P.S. (Glasgow), F.I.C.S.
GLASGOW, SCOTLAND

John Macintyre was born in the east end of Glasgow on October 2, 1857. The family came from Argyllshire. His father was a journeyman tailor.

He was a delicate child and received most of his education from his parents. At ten years of age his health markedly improved and he then attended night school. His mother, to whose encouragement he doubtless largely owed much, was a relative of the African explorer, Dr. Livingstone, and in time Prof. Macintyre named his eldest son after him.

Varied Experience

On leaving school, John Macintyre entered a lawyer's office. He then became a bank clerk and later went to work in a grain store. During this time he attended night school and saved enough money to enter Glasgow University as a medical student, which he did in 1878. He was graduated four years later with commendation and medals in botany and anatomy.

From Ship's Surgeon to Pioneer in Surgical Specialty

He was first a ship's surgeon and made several trips to India. On returning, he settled in Glasgow and, after living in several houses, finally settled in 179 Bath Street, which house he occupied to the end of his days.

He received an appointment as assistant surgeon to Glasgow Royal Infirmary. Later he was appointed surgeon of the diseases in the nose, throat and ear. During this time he took postgraduate courses in London, Vienna, Berlin and Paris. He was the first recognized nose, throat and ear specialist in Scotland. He was also an assistant surgeon to the Locke Hospital and for a time was demonstrator of anatomy in St. Mungo's College.

Prof. John Macintyre, M.B.C.M., F.R.F.S.E., F.R.F.P.S., K.St.J., D.L., J.P., LL.D.
1857-1928

The First X-Ray Tube

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Postgraduate Courses and Conferences

INTERNATIONAL COLLEGE OF SURGEONS

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(For Postgraduates)
Under the Auspices of the
International College of Surgeons

UNITED STATES

The United States Section

International College of Surgeons

announces its

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August 3, 1959 November 2, 1959

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Gastric Surgery
Surgical Physiology
Use of Blood and Derivatives
Pediatric Surgery
Surgery of Large Bowel
Surgery of Small Bowel
Intestinal Obstruction
Anorectal Surgery
Surgery of Pancreas and Spleen
Vascular Surgery
Breast Surgery
Gallbladder Surgery
Thoracic Emergencies
Hand Injuries and Infections
Gynecologic Surgery
Surgery of Hernia
Abdominal Injuries
Surgery of Esophagus
Thyroid Surgery
Radioisotopes in Surgery

For further information write to either of the following:

International College of Surgeons
1516 Lake Shore Drive, Chicago 10, Illinois

Cook County Graduate School of Medicine
707 South Wood Street, Chicago 12, Illinois

Professor John Macintyre

M.B.C.M., F.R.F.S.E., F.R.F.P.S., K.St.J., D.L., J.P., LL.D.

1857-1928

WILLIAM JAMES MOORE, M.D., F.R.C.P.S. (Glasgow), F.I.C.S.
GLASGOW, SCOTLAND

John Macintyre was born in the east end of Glasgow on October 2, 1857. The family came from Argyllshire. His father was a journeyman tailor.

He was a delicate child and received most of his education from his parents. At ten years of age his health markedly improved and he then attended night school. His mother, to whose encouragement he doubtless largely owed much, was a relative of the African explorer, Dr. Livingstone, and in time Prof. Macintyre named his eldest son after him.

Varied Experience

On leaving school, John Macintyre entered a lawyer's office. He then became a bank clerk and later went to work in a grain store. During this time he attended night school and saved enough money to enter Glasgow University as a medical student, which he did in 1878. He was graduated four years later with commendation and medals in botany and anatomy.

From Ship's Surgeon to Pioneer in Surgical Specialty

He was first a ship's surgeon and made several trips to India. On returning, he settled in Glasgow and, after living in several houses, finally settled in 179 Bath Street, which house he occupied to the end of his days.

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He now proceeded to establish the x-ray unit in Glasgow Royal Infirmary. This made rapid progress and became an established department. During this time he continued his research work at his house in Bath Street, where he had a complete unit. He had the co-operation of Lord Kelvin, Lord Blythswood and Dr. Bottemley.

Meeting of the Wizards

Some time later, the famous Mr. Edison visted Glasgow, and his arrival was announced as that of the wizard of the x-rays. He at once went to Prof. Macintyre's house and while there saw, in the viewing box, a photograph of the skull which demonstrated the ossicles of the middle ear. After examining it, he said. "I am far behind the times." We have never heard of Edison's x-rays since.

About this time a well-known professor of divinity consulted a surgeon in London on account of abdominal pain. The surgeon gave a very serious diagnosis and the professor was very much upset. He came back to Glasgow and saw Prof. Macintyre, who examined him, took an abdominal picture, and told him he had a large stone in his right kidney but that no tumor was present. That stone was successfully removed by another Glasgow surgeon, and the patient made an excellent recovery. He lived for many years afterwards. On writing his biography he referred to Macintyre as "the wizard of the x-rays."

Thoracic Radiography

Shortly after that event, a youth of eighteen years was seriously troubled with a cough. He was seen by the professor of medicine, who was unable to make a diagnosis, and an x-ray examination was suggested. The professor said it would be useless, but the suggestion was carried out by Prof. Macintyre, who found a lesion in the middle lobe of the right lung. This, so far as we know, is the first radiograph of the lung.

At a later date Macintyre introduced stereoscopic photography and demonstrated a fracture of the skull which was seriously contested but which was ultimately found to be correct.

A short time later he radiographed a patient suspected of having chronic appendicitis. This he diagnosed and the condition was confirmed later by operation. Some little while later he diagnosed a carcinoma of the caecum.

Radiologic Diagnosis of Carcinoma of the Breast

In 1920 he radiologically examined a mammary gland and diagnosed a carcinoma. This was proved histologically after the operation, and so far as is known is the first case of radiological diagnosis of carcinoma of the gland.

During his work at the Glasgow Royal Infirmary, Prof. Macintyre trained Dr. Riddell, who ultimately became radiologist to Glasgow Royal Infirmary and at a later date was appointed radiologist to Glasgow Western Infirmary and was the first lecturer in radiology at Glasgow University.

Friendship with Sir Morell McKenzie

During the latter part of the last century, Sir Morell McKenzie was requested by the late Queen Victoria to see her son-in-law, the late German Emperor Edward III, who suffered from a throat condition. Unfortunately, his illness proved fatal and he reigned for only ninety days. Sir Morell and Professor Macintyre were friendly, and when the former died, in 1892, Macintyre was invited to go to London and succeed him, but he declined. However, he secured some of his consulting room furniture and used, in his own consulting room, three chairs which had been used by McKenzie. As is well known, McKenzie was very much criticized relative to his treatment of the German Emperor. These criticisms were bitterly resented and Macintyre supported him to the full on every occasion.

Early Use of Radium

Madame Curié discovered radium. Shortly thereafter Macintyre received a specimen and proceeded to treat patients with it. He soon found the demand for the treatment was getting beyond him and he called a meeting in February 1913 at which many distinguished gentlemen were present, including Lord Blythswood, Sir John Stirling Maxwell and Sir George Beatson. As a result, the Radium Institute was founded and proved a great success.

Host to Royal Family

The old Glasgow Royal Infirmary was being rebuilt at this time and the electrical pavilion was organized and named King George V Pavilion. It was opened by the King himself in July 1914. The King was shown around by Prof. Macintyre, the Queen by Mrs. Macintyre, and the Princess Royal by Dr. Riddell.

Prof. Macintyre had been at the Anderson College Medical School for some years and in 1909 was unanimously appointed dean. After being dean for some little time he appointed the author a professor of surgery, that chair being vacant, and the occupant held it until he was appointed to the chair of surgery at Glasgow University in 1924 on the death of Sir Wm. Macewen. The school had been called the Anderson College Medical School, but the name was changed to the Anderson College of Medicine and so it remains to this present day. Within the past year it has been taken over by Glasgow University, as all extramural teaching has ceased.

During his term of office as dean, Prof. Macintyre carried out many improvements and extended the scope of the college to an immeasurable degree, he having founded the chairs of dental surgery, metallurgy, pathology and bacteriology.

Daily Round of Work

His usual day's routine was such that he commenced work at nine in the morning, continuing, with a short interval for lunch, until two o'clock. He then visited the hospital, where he paid a ward visit and operated. This kept him, as a rule, until five. On returning home, he again saw patients between the hours of five and six to accommodate people who could not come during the day. During the session, he lectured usually three days a week from three to four in the afternoon. He had many committee meetings, which mostly were held between the hours of two and three in the afternoon. Meetings associated with the college were held in the evening. He seldom missed any of them.

His evenings were largely spent experimenting and writing. He held dinner parties on various occasions which were most enjoyable entertainments. On these occasions he was assisted by his wife, who had a charming personality.

Family Life and Social Contacts

His family consisted of two sons and one daughter. One son died in infancy; the other followed in his father's footsteps. His studies were interrupted by the First World War. During his service he was promoted to be adjutant of the Queen's Own Cameron Highlands. While on active service he went over the top seventeen times but was not wounded. At the termination of his service he returned to Glasgow and graduated M.B.Ch.B. in 1921.

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Interest in Personalities

Macintyre was very much interested in phonograms and recorded many personalities for the first time. Among them were Lord Lister, Lord Blythswood and Paderewski. He was very popular with the star artists and shortly before Pachman's last appearance in Glasgow, a notice appeared in the *Glasgow Evening News* — "Would you believe it? Truth is stranger than fiction. Pachman has not yet seen Professor Macintyre."

Prof. Macintyre was instrumental in the foundation and development of the Elder Hospital, which was founded by the late Mrs. Elder, widow of the founder of the Fairfield Shipbuilding Company Limited. He was also instrumental in directing large sums of money for the endowment of beds and wards in Glasgow Royal Infirmary.

Honors from Near and Far

In recognition of his services he was given the Knight Commandership of the Order of St. John of Jerusalem in 1915. The town council bestowed a doctor of laws degree on him and also made him a justice of the peace, and Glasgow University conferred upon him an L.L.D.

Dr. Macintyre was a member of many international societies. He was the first president of the newly founded Roentgenological Society. He was a Fellow of the Royal Society of Edinburgh, president of the British Laryngological and Rhinological Societies, a corresponding Fellow of the American and French Laryngological Societies, president of the Institute of Electrical Engineers and president of the West of Scotland Branch of the British Medical Association.

He was, in addition to his other qualifications, an M.B.C.M., F.R.F.P.S., F.R.S.E. He was also associated with the foundation of the Royal Naval Volunteer Reserve, and was one of the founders of the Garscube Cottage Hospital for soldiers wounded in the South African War.

All the Virtues of the Scotch

Personally, he was a typical Scotsman, difficult to know, but once you knew him he was your friend for life. He did not drink, but he smoked cigars continuously. He was an indefatigable worker and humane in all his actions. As an operator he was most dexterous. He never troubled about fees and on many occasions treated deserving cases without money or price. He was also very influential and was instrumental in helping to found many charitable institutions in the city.

He was always a strong supporter of the junior man who showed any interest in his work. During his lifetime he published approximately one hundred and eleven papers and articles.

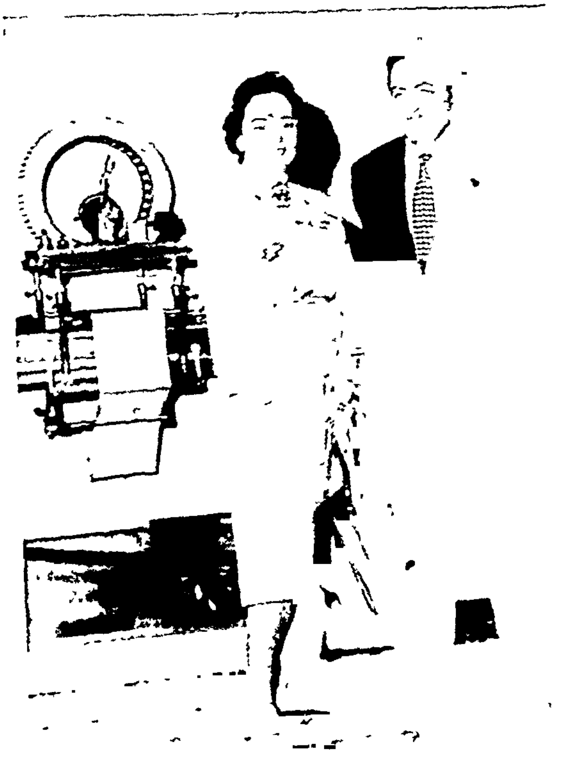
In 1928 he fell into ill-health and, having fulfilled to the utmost a life of full devotion to his fellow man, he finally passed into that unknown world which rules all round the sea. He died on October 29, 1928.

* * *

The Editorial Office of the Journal of the International College of Surgeons will appreciate receiving the names of our members who wish to aid in abstracting the foreign literature. Those who are interested, kindly communicate with Dr. Max Thorek, Editor-in-Chief, Journal of the International College of Surgeons, 850 West Irving Park Road, c/o The American Hospital of Chicago, Chicago 13, Illinois, U.S.A.

International Surgeons' Hall of Fame

VISITORS FROM FAR AND NEAR



Above: Dr. and Mrs. Ennio Botelho Perrone of Cidade de Presidente Prudente, Estado de São Paulo, Brazil, in the roentgenologic exhibit room

Above at right: Dr. and Mrs. Alan Grant of Sidney, Australia, before a mural depicting a reception at the Sorbonne in honor of Joseph Lister, who is being presented by Louis Pasteur. Dr. Grant is an outstanding Fellow of the International College of Surgeons and its able representative in Australia

At right: Dr. and Mrs. Mario Gonzalez-Ulloa of Mexico City, Mexico, leaving Hall of Fame. The number 1524 Lake Shore Drive in Chicago is a famous landmark which visitors to the city look for

Announcement of Awards

Offered by the

International College of Surgeons

SECTION ON OBSTETRICS AND GYNECOLOGY

Manuscript Awards

The Section on Obstetrics and Gynecology of the International College of Surgeons is pleased to announce its second annual competition for two awards to be given the authors of manuscripts selected by the Prize Committee of the Section. The first award will be $500 and the second $300.

Fellows of the International College of Surgeons are not eligible. Contestants must be (a) interns, residents, or graduate students in the field of obstetrics and gynecology, or (b) engaged in the practice or teaching of obstetrics and gynecology.

The two successful contestants will be asked to appear in person to participate in the regular scientific program of the Section on Obstetrics and Gynecology at the annual Congress of the North American Federation of the International College of Surgeons in 1959. Personal expenses incurred by such participation must be borne by the winners. The awards will be made in cash by the Chairman of the Section during the course of the 1959 Congress.

An original and three copies of each manuscript (carbon, photostatic, mimeographic or other) and illustrations must be submitted on or before June 1, 1959 to

Dr. Harvey A. Gollin
Secretary, Prize Committee
55 East Washington Street
Chicago 2, Illinois

SECTION ON OPHTHALMOLOGY AND OTO-RHINO-LARYNGOLOGY

Research Grant

The Section on Ophthalmology and Oto-Rhino-Laryngology of the International College of Surgeons has established a Research Grant. This Section is especially interested in the following forms of scientific inquiry.

Furstenberg Plan

A young specialist, a resident or a medical student may be given an opportunity to explore scientifically under supervision.

Leopold Plan

An ophthalmologic or oto-rhino-laryngologic summer fellowship may be instituted for a research project.

Scheie Plan

Junior and Senior medical students of superior ability may be encouraged to enter the special fields of ophthalmology and oto-rhino-laryngology.

Participation Plan

A grant may be given in cooperation with other sponsors in order to help make possible major research projects.

Please apply, giving details and ideas, to

Paul C. Craig, M.D., Chairman
Committee on Scientific Work
232 N. Fifth St., Reading Pa.

From the Executive Director's Notebook

OREGON REVISITED AND THE STUDENT EXCHANGE PROGRAM AUGMENTED

Dr. Ross T. McIntire

My visit to Portland, Oregon, in early April allowed me to accomplish a number of things, the most important of which was my visit with Dr. Ben Wade, the regent for the state of Oregon. Dr. Wade is one of the most successful surgeons of the Pacific Northwest and has practiced in Portland for more than forty years.

It was my pleasure to have breakfast with Dr. and Mrs. Wade in their charming home, which is situated in a beautiful wooded area about eight miles from the center of Portland. The landscaping has been so well done that little of the natural surroundings has been disturbed. There is a broad expanse of lawn from the house to a small lake surrounded by giant firs, spruce and poplars, as well as by other trees native to Oregon. The woods were full of wild flowers, and to an Oregonian there is nothing more beautiful than springtime in its natural habitat.

Dr. Wade Evolving Plan for Young Surgeons

Following this, we returned to the city, where a luncheon was held at the Aero Club. The guests included many of our officers and outstanding surgeons of Portland. Discussion brought out the many features of the program that we have planned for the coming year for the International College of Surgeons. The opportunity for visits to the various nations of the world was described. People in the Pacific Northwest are quite conscious of the need to know more about other countries of the world, especially of the Far East. Dr. Wade discussed at length his plans for interesting young surgeons in the College and asked for comment, which proved to be most interesting. In a very short time we will distribute the plans and information that Dr. Wade is developing. We believe it will do much to interest young surgeons in international needs in the field of health.

Foreign Students and International Relations

On my return to Chicago, it was with great pleasure that I appeared as the speaker for the monthly meeting of the Executive Student Council and the International Association of the University of Illinois. The subject assigned to me was *The Role of Professional Students in International Relations.*

In the discussion, I pointed out the experience that we are now gaining in the examining of foreign medical students for internships and residencies in the schools of our country. For example, in February of 1959, 1,278 students took the examination in medical centers in this country; 616, or 58.2 per cent passed, and 341 made qualifying grades which gave them a temporary permit to continue for another year in our schools. Those taking the examination in fifty centers located in other countries of the world found only 31.7 per cent making a passing grade.

Language Difficulties and Other Problems

The language difficulty seems to be a major factor, as the examination question-are set up on a uniform basis, supervised by our National Board of Medical Examiners. Another important point brought out was that when foreign graduates return to their homelands after study in the United States there is a great tendency to refuse acceptance of the work done in our schools and hospitals. This would seem to call for consideration of the entire exchange plan of medical students by the United Nations, probably through the World Health Organization.

In the question and answer period, it was brought out that the student himself believes he has a great opportunity to be an ambassador of good will. The International College of Surgeons can play a very important, a very vital role, in improving understanding in the exchange program.

Ross T. McIntire

International College of Surgeons will see it all
Europe and Russia in the summer
The whole wide world in fall

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THE UNITED STATES SECTION

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The program will be offered under the supervision of the Hospital's Surgical Staff. It will include illustrated lectures, motion pictures, anatomy demonstrations, operative clinics and practice surgery by the participants on anesthetized dogs. Consideration will be given not only to surgical technic, surgical complications and management of the surgical patient, but also to an intensive review of the basic sciences in relation to clinical surgery. In addition to twenty hours of surgical anatomy on the cadaver, the program will include lectures and demonstrations on the following:

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- Vascular Surgery
- Breast Surgery
- Gallbladder Surgery
- Thoracic Emergencies
- Hand Injuries and Infections
- Gynecologic Surgery
- Surgery of Hernia
- Abdominal Injuries
- Surgery of Esophagus
- Thyroid Surgery
- Radioisotopes in Surgery

Members of the International College of Surgeons are urged to take advantage of this exceptional opportunity to continue their training in Surgery. Associate Members and Junior Members who attend will receive appropriate consideration and credit when applying for advancement.

Requests for application or further information may be
addressed to either of the following:

International College of Surgeons
1516 Lake Shore Drive
Chicago 10, Illinois

Cook County Graduate School of Medicine
707 South Wood Street
Chicago 12, Illinois

United States Section

THE PRESIDENT'S MESSAGE

California, Texas, Alabama and New York!

Dr. Edward L. Compere

Since writing the President's Message for the last issue of the *Bulletin* of the International College of Surgeons, a message which I hope that you have all read, I have been to California to visit the regents, vice-regents and credentials committee members for Southern California. My wife and I nearly always go by plane to save time, but for this trip to California we thought we needed a little rest, and so went out on the Santa Fe Chief. We disembarked at San Bernardino and were met there by friends and were driven to Palm Springs. After five very restful days, which included some tennis and golf, we picked up a U-Drive car and proceeded on toward Los Angeles. We stopped over night en route at the Walt Disney Motel, which is an impressive structure with modern shops, a wonderful dining room and very comfortable bedrooms. It is located just across the street from Disneyland and Virginia took advantage of the opportunity of visiting that interesting playground, while I spent a good part of the day in a remarkable hospital known as the *Rancho Los Amigos*. To this hospital, which is operated by the County of Los Angeles, are sent patients who are considered to be so badly paralyzed from poliomyelitis, or crippled from other diseases, that there is very little hope that they can ever be rehabilitated. **Dr. Vernon Nickel** and his assistant and associate, **Dr. Jacquelin Perry**, are doing most remarkable surgery on these patients, and their results are certainly impressive. They have rehabilitated, to a considerable extent, patients with respiratory paralysis, as well as paralysis of from one to all four extremities, so that they are able to sit up, some of them to walk, and nearly all of them to feed themselves.

In Los Angeles I had a very satisfactory and pleasant visit with the regent, **Dr. Joseph de Los Reyes**, and one of the vice-regents, **Dr. "Nat" Irving Wills**, who is one of our most remarkable members. In his younger days, "Nat" was an actor and he knows most of the actors and actresses in Hollywood, and they are very proud to be among his friends. He has been, for many years, an eminent surgeon on the staff of the Santa Barbara Clinic. Also at our little conference was **Dr. Ross Parks**, who has been secretary of the Southern California Chapter of the International College of Surgeons for a number of years.

Monday evening, March 16, 1959, the officers, regents, vice-regents, credentials committee members and a few other members of the Southern California Chapter had their annual banquet and business meeting. The attendance was excellent. Most of the doctors brought their wives and it was a very pleasant occasion indeed. Just prior to the dinner, I met with the regent, vice-regents and members of the credentials committee and we discussed various problems of the College, and I answered questions to the best of my ability. I believe that we were all enlightened and all came away from that meeting feeling very good about the future of the International College of Surgeons.

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A conflict in my schedule, due to having accepted the invitation to be the visiting chief of surgery for one week at the Atlantic City Hospital before the dates for the Alabama Surgical Meeting were scheduled, will make it impossible for me to be in Alabama at that time. I regret this greatly, because they do have a remarkable program and I should love to be there to have fellowship with the Alabama members of the College, to meet **Senators Hill** and **Sparkman**, and to hear **Dr. Wernher Von Braun** talk about interplanetary rockets. I hope that many of you will take time to attend this meeting.

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I am planning to attend the New York State Surgical Section Meeting at Kiamesha Lake May 28 to 31, 1959. Virginia and I were there last year at the Concord Hotel and had a very fine time. We are really looking forward to being back at the Concord, and we intend to take full and active part in all of the scientific and social programs. I hope that many of the members of the International College of Surgeons who live in the New England States and other states adjacent to New York will travel to Kiamesha and help us to make this a truly memorable and worthwhile meeting. I shall hope to see you there.

Edward L. Compere

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United States Section

THE PRESIDENT'S MESSAGE

California, Texas, Alabama and New York!

Dr. Edward L. Compere

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Alabama Surgical Section

INTERNATIONAL COLLEGE OF SURGEONS

ANNUAL MEETING

Russel Erskine Hotel Huntsville, Alabama

May 21-22, 1959

Dr. Paul W. Shannon

Dr. Edwin V. Caldwell

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George C. Douglas, M.D., A.I.C.S.,
Birmingham
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Edwin V. Caldwell, M.D., F.A.C.S., F.I.C.S.

G. L. Baker, M.D., Huntsville

Program

THURSDAY, MAY 21, 1959

Morning

Call to Order

E. V. CALDWELL, M.D., F.A.C.S., F.I.C.S., President, Alabama Section, International College of Surgeons; Fellow, S. E. Surgical Congress; Chairman, Alabama State Board of Health, Huntsville, Alabama

Invocation

THE REVEREND GEORGE F. HART, Pastor, Saint Marks Lutheran Church, Huntsville, Alabama

Address

R. B. SEARCY, Mayor, Huntsville, Alabama

Address

FRED W. SMITH, M.D., F.A.C.S., D.A.B., Instructor, Department of Surgery, Medical College of Alabama; Fellow, S. E. Surgical Congress; President, Madison County Medical Society, Huntsville, Alabama

SCIENTIFIC SESSION

Presiding

J. O. MORGAN, M.D., F.A.C.S., F.I.C.S., D.A.B., Past President, S. E. Surgical Congress, Gadsden, Alabama

Use of Plastics in Mammaplastry

CHESTER W. TROWBRIDGE, M.D., F.A.C.S., F.I.C.S., Assistant Secretary and Treasurer, International College of Surgeons, Oak Park, Illinois

Management of Acute Colon Obstruction

CLAUDE J. HUNT, M.D., F.A.C.S., F.I.C.S., D.A.B., Past President, American Goiter Society; Former Associate in Surgery, University of Kansas Medical School, Kansas City, Missouri

Eye Diseases Diagnosed by Inspection

JOE M. DIXON, M.D., D.A.B., Instructor in Ophthalmology, Medical College of Alabama, Birmingham, Alabama

Cancer of the Lung

CHARLES J. DONALD, M.D., F.A.C.S., Associate Professor of Chest Surgery, Medical College of Alabama, Birmingham, Alabama

Woman's Auxiliary

THE PRESIDENT'S MESSAGE

Tribute to Three Fellow Officers of the Auxiliary

Mrs. Earl Ingram Carr

It is with complete pleasure that I am approaching the article for this month's *Bulletin.* The reason for this? Three members of the Auxiliary Board are being presented to you — three members who have worked assiduously from the founding of this organization. They have worked with practicality, diplomacy and devotion, attacking each task and each problem with skill and authority.

Mrs. Jerome Moses, the niece of Dr. and Mrs. Max Thorek, is the financial secretary and the chairman of the Hall of Fame committee of the Auxiliary. Jeanette Moses is a true Chicagoan. She was born there, attended college there, married her husband there when he was a sophomore at Loyola Medical School. He is now an eminent member of the Board of the International College of Surgeons. And they have a son following his father in medicine at Loyola as a sophomore in premedical school and a daughter who is in high school. Mrs. Moses' conception of her duty to our Auxiliary is all encompassing. She always has accepted a request to handle any problem, however large, however small. She does this with dispatch and aplomb, as I am sure she conducts her activities in the American Cancer Society, in the Chicago Medical School Faculty Wives' Organization, in the Auxiliary of the Stritch School of Medicine, et cetera.

In **Mrs. Clement Martin,** whose husband is the treasurer of the International College of Surgeons, our Board has a dignified, devoted, diplomatic member. She is gifted in the literary field, having had poems, short stories and articles published, and her play *Drafted* produced. Mrs. Martin attended Duchesne College and Northwestern University and, in addition, two schools of music. She has been the president of numerous groups and organizations, but says she is "proudest of my connection with the Woman's Auxiliary to the International College of Surgeons for work done for humanity." Is it surprising that she is most outstanding as corresponding secretary and in her numerous and varied further activities in our behalf? Dr. and Mrs. Martin have a son firmly and successfully established as a physician.

Mrs. Louis L. Plzak, our effective treasurer, is the wife of another surgeon prominent in the affairs of the International College of Surgeons. Janice Plzak is a woman of science and research, having received a Ph.G., and a B.S. from the University of Illinois. Before her marriage Mrs. Plzak was chief pharmacist at West

Mrs. Jerome Moses

Mrs. Clement Martin

Mrs. Louis L. Plzak

Suburban Hospital and currently is doing research in radiation as a graduate student at the University of Chicago and at the United States Air Force Radiation Laboratory. In addition to this she is the author of a number of scientific papers and is preparing a thesis for her master's degree. All this and six fine children — the eldest, Louis, Jr., now interning in Boston, two daughters who are second and third year medical students, and a son George entering medicine in the fall! The two youngest are in elementary school — and who can fathom what they may choose as careers — Space?

These three wonderful women are representative of the membership of our Board. The diversity of their interests is apparent, but all are devoted to the worthwhile cause of international cooperation as demonstrated by the International College of Surgeons. *Ruth Smith Carr*

◆ ◆

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I am interested in furthering the program of the Auxiliary to the International College of Surgeons. Enclosed is my check ($10.00 per member) covering membership(s) for the following:

NAME: ....

ADDRESS: ....

Make check payable to The Woman's Auxiliary, United States Section, International College of Surgeons, 1516 Lake Shore Drive, Chicago 10, Illinois.

Section News

GREECE

Meeting to Present Series of Round-Table Discussions

The Greek Section of the International College of Surgeons is scheduling a series of round-table discussions for its meeting, May 29-30, in Athens.

All round-table presentations will be followed by general discussion.

Prof. Dr. N. Louros is president; **Prof. J. Charamis**, vice-president, and **Prof. N. Christeas**, general secretary, of the Greek Section of the International College of Surgeons.

The program is as follows:

FRIDAY, MAY 29

Hemorrhage of the Stomach
Moderator
PROF. N. CHRISTEAS
Participants
PROF. YANNACOPOULOS
PROF. ZEVGOLATIS
PROF. ZERVOYANNIS
PROF. CHRYSOSPATHIS
PROF. MEGALOICONOMOU

Slipped Disc
Moderator
PROF. GAROFALIDIS
Participants
PROF. YANNACOPOULOS
PROF. HADJIGEORGIOU
PROF. CANVISSI
PROF. ZAVERDINOS

Injuries of the Head
Moderator
PROF. TOUL
Participants
PROF. J. CHARAMIS
PROF. CHRYSICOS
PROF. YANNACOPOULOS
PROF. PATRIKIOS
PROF. ICONOMOS

SATURDAY, MAY 30

Repeated Cesarean Section
Diagnosis and Surgical Treatment of Sterility
Urologic Injuries of the Female
Moderator
PROF. N. LOUROS
Participants
PROF. CAIRIS
PROF. ANTONOPOULOS
PROF. KYRIAKIS
PROF. PAPADIMITRIOU
PROF. YANNACOPOULOS
PROF. VITALIS
PROF. COUTIFARIS
PROF. KASKARELIS
PROF. PAVLATOU
PROF. PAPATHÉODOROU
DR. COUTIFARIS
DR. NAOUMIDES

Stenosis of the Esophagus
Moderator
PROF. ALIVIZATOS
Participants
PROF. YANNACOPOULOS
DR. AVLAMIS
DR. LEKOU

Heart and Lung Surgery
Moderator
PROF. ALIVIZATOS
Participants
PROF. ECONOMOS
PROF. SCOUTELIS
PROF. FERETIS
PROF. SARRIS
DR. LAZARIDES
DR. ROMANOS

In Memoriam

DONALD TAYLOR ATKINSON
M.D., Sc.D., LL.D., F.A.C.S., F.I.C.S.
1874-1959

Dr. Donald Taylor Atkinson
Sc.D., LLD., F.A.C.S., F.I.C.S.

Dr. Donald T. Atkinson, Sc.D., LL.D., F.A.C.S., F.I.C.S., of San Antonio, Texas, died on Friday, March 20, 1959.

He was born in Shemogue, New Brunswick, Canada, May 31, 1874, the son of Joseph Silliker and Mary Grant Atkinson.

He was graduated M.D. by the Hospital College of Medicine, Louisville, Kentucky, in 1902. He studied abroad at the Allgemeines Krankenhaus in Vienna and at the Royal London Hospital in London, England, and received the honorary degrees of Sc.D. (Center College, Danville, Kentucky) and LL.D. (Huron, South Dakota).

Dr. Atkinson became a naturalized United States citizen in 1916. He began his practice of medicine in San Antonio, Texas, in 1902.

He was a member of the staff of Nix Hospital, Santa Rosa Infirmary and the Medical and Surgical Hospital, all of San Antonio. He was an associate editor of the *Eye, Ear, Nose and Throat Journal* and for some years served as editor of the ophthalmic department of the *Texas Medical News*. He received the Patronis Medal Award from the University of Florence, Italy, in 1951.

In addition to membership in local, regional and national medical, surgical and ophthalmologic organizations, Dr. Atkinson was a member of the Royal Academy of Medicine (Ireland) and the National Surgical Society of Italy.

He was a man of many interests. He wrote not only on the diseases and surgical treatment of the eye, but on medical and surgical history and a variety of other subjects which appealed to his many-sided personality. He illustrated his technical books himself, collaborated with others and saw reproductions of his illustrations included in medical books. He originated a number of medico-surgical instruments.

Dr. Atkinson was a member of the advisory board of the International College of Surgeons' School of Surgical History, and was vitally interested in the International Surgeons' Hall of Fame.

In all these activities, as well as in his professional field of surgery and ophthalmology, he received wide recognition and was the recipient of numerous honors.

He had a long life, full of activity and achievement, joyousness and generosity.

The officers and the members of the Board of Governors of the International College of Surgeons extend to Mrs. Atkinson their most sincere sympathy upon the loss of her distinguished husband.

In Memoriam

TADASU ITOH

M.D., F.I.C.S.

1901-1959

Dr. Tadasu Itoh, F.I.C.S.

We regret to announce the recent death of Dr. Tadasu Itoh, F.I.C.S., director of the Itoh Surgical Hospital in Tokyo, Japan.

Dr. Itoh was born in Hamamatsu, October 19, 1901. He was graduated M.D., from the Manchurian Medical College in 1925, and remained there for six additional years to serve as lecturer and continue his study and research in the department of pathology.

From 1931 to 1937 Dr. Itoh was associated with the Noguchi Hospital in Beppu, Ohita, in the department of general surgery.

Since 1937 until the time of his death, Dr. Itoh was the director of the Itoh Hospital in Tokyo, in charge of both general and thyroid surgery. But he was particularly interested in and devoted to research in surgery of the thyroid gland. He published, both in German and in Japanese, articles on the results of his research and on the technic of thyroid surgery.

Dr. Itoh's untimely death is greatly mourned. The officers and the Governors of the International College of Surgeons respectfully offer their condolences to Dr. Itoh's family and to his associates.

* * *

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Mrs. Robert Le Sage, Chairman, Shores Acre, Dixon, Illinois

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The Journal of the International College of Surgeons

FOUNDED IN GENEVA, SWITZERLAND, 1935 - INCORPORATED IN WASHINGTON, D. C., 1940

Vol. 31 June, 1959 No. 6

General Surgery

Indwelling Common Duct Tubes

LYON H. APPLEBY, M.D., F.R.C.S. (Eng.), F.R.C.S. (C.), F.A.C.S., F.I.C.S.*
VANCOUVER, BRITISH COLUMBIA, CANADA

"THERE are two sorts of ruins, one is the work of time, the other of men" *(Chateaubriand)*. I propose to deal exclusively with the latter.

My interest in this research was stimulated by two separate cases of similar type:

CASE 1.—Simple exploration of the common duct was performed, with cholecystectomy. Simple soft rubber catheter drainage of the duct was employed, with negative results, followed by a permanent biliary fistula of eight months' duration. The patient was referred to me at this stage, and at re-exploration there was no common duct left whatever except that portion which is embedded within the head of the pancreas and the area of the bifurcation of the hepatic ducts in the hilus of the liver. A defunctionalized loop of jejunum was used to construct a new duct.

CASE 2.—I performed simple exploration of the common duct with saline lavage. No calculi were detected. Simple closure of the duct was performed with five fine sutures of No. 0000 chromic catgut. The gallbladder fossa was drained. There followed a permanent biliary fistula of four months' duration. At reoperation all traces of the common duct had vanished except a stump embedded in the hilus of the liver and the lower end or intrapancreatic portion. Again a new duct had to be constructed from a defunctionalized jejunal loop.

As Clement the Alexandrian has so well said, "The beginning of truth is to wonder at things." I began to wonder: By what process had these ducts so completely disappeared, and if totality was apparently so easy to obtain, must there not be reactions of less severity in which colliquative necrosis accounted for only partial destruction of the duct with resultant cicatrix and stricture?

Total colliquative necrosis of the common duct could occur only as a result of serious interference with its blood supply. Early in this research it became evident that standard textbooks of anatomy made only the most casual reference to the blood supply of the common duct and none at all to the intimacy of architecture of its vascularization.

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*Associate Professor Clinical Surgery, University of British Columbia, Vancouver, B. C.

Read at a Meeting of the New York Regional Division of the United States Section, International College of Surgeons, Niagara Falls, Canada, July 19[illegible]

Submitted for publication Feb. 26, 1959

The main blood supply of the common duct is an ascending branch of the supraduodenal artery of Wilkie,[1] as was recently confirmed by Michels[2] of Philadelphia, whose assistance I have found most helpful. The supraduodenal artery is well known for another reason, as a leish of vessels is given off from it to the anterior surface of the duodenum and downward traction of the duodenum, obliterating the terminals of this vessel, created what came to be known as, "the white spot of Mayo," and was thought to be an etiologic factor in duodenal ulcer. An occasional variant is that the artery to the common duct may come off the superior pancreaticoduodenal.

The supraduodenal artery of Wilkie gives off a very constant branch to the lateral side of the lower end of the exposed portion of the common bile duct. This vessel courses upward on the anterolateral surface of the duct and anastomoses with a descending artery, which may originate from the right or the left hepatic artery but most commonly originates from the cystic artery.

The anastomotic plateau or confluence of these two vessels is situated just below the entrance of the cystic into the common duct, almost exactly at the spot where the common duct is incised surgically for exploratory purposes. The constancy of this vessel has been repeatedly confirmed by specimens injected with colored liquid Latex and by extensive dissections. As a result of this investigation, certain definite facts have been established.

1. If the ascending branch of Wilkie's supraduodenal artery to the common duct is large, it usually meets with a descending branch that is very small; although the reverse is occasionally true, almost never have I observed both ascending and descending branches to the duct to be of anything like equal size.

2. The ascending branch from the artery of Wilkie may be, indeed, the only artery of supply to the entire extrahepatic common duct, and if placed a little more anteriorly than usual it becomes subject to surgical injury, with what may be disastrous results.

3. The extremities of the common duct, the intrahilar and the intrapancreatic portions of the common duct, possess such a wealth of interanastomosing vascular channels that both ends must be considered well-nigh indestructible as a result of any surgical vascular interference from which the duct is liable to suffer.

4. The common duct is a parchment-like structure containing little or no muscle except at its lower end, where one encounters the muscular mechanism of the ampulla of Vater and the sphincter of Oddi, and the vessels covering its surface penetrate the duct much like the pile of a carpet. If the surface of the duct be stripped in effecting exposure, frequently one can see, on the surface of the exposed duct, minute punctate bleeding points such as are seen on the surface of dense scar tissue that has been severed. Almost any intramural anastomosis within the duct and its punctate type of supply can easily lead to segmental necrosis of stripped areas if the stripping has been needlessly extensive. This punctate type of surface vascularization of the duct may be likened to the feet of a millipede walking on its surface.

Lessons to be drawn from a knowledge of the intimacy of the blood supply of the common duct are:

1. Postoperative necrosis of ducts is traumatic, leading to devascularization, local or total, and factors other than trau-

matic cannot be reasonably substantiated.

2. If the ascending vessel of supply from Wilkie's supraduodenal artery is larger than its opposite number, the descending artery is likely to be small, and they are rarely of equal size.

3. The danger of stripping the duct surface for purposes of visualization is emphasized. Interruption of the feet of the millipede may result in localized segmental necrosis of the parchment-like duct, leading to postoperative duct rupture, fistula and failure of many anastomotic procedures.

4. Ligation of a bleeder on the surface of the duct may lead to destruction of the whole duct or, to a lesser extent, cause segmental necrosis. No visible vessel on the surface of a duct should be disturbed. Opening on the common duct should deliberately and visually dodge the visible vascular supply. "Scrubbing" the exposed duct or, for that matter, any other area with gauze is to be condemned. Stripping a duct to give better exposure is wholly unjustified; it should be opened through an area devoid of visible vessels, with its fascial envelope left intact and when it is resutured all visible vessels should be avoided; none should be ligated or included in a suture.

5. Ligation of a cystic artery should never be done near the source of the artery. The descending branch to the common duct may take origin well out along the vessel. The cystic artery should be followed out to the wall of the gallbladder and ligated there; if a visible descending branch is seen, it should by all means be preserved.

6. In all cases, total disappearance of ducts is due to necrotization caused by interference with the vascular supply. Anastomotic leaks following duct repair are frequently due to necrosis of an end caused by overexposure. Most fistulas are due to segmental necrosis, and in the healing thereof strictures are born.

The author, convinced that the majority of postoperative strictures of the common duct, as well as other unfortunate sequelae, are preventable, presents the results of his personal study and experience in solving this problem. He cautions the surgeon against "stripping" the common duct of its sheath to obtain better visibility and against scouring with a gauze swab. Strong emphasis is laid on the necessity of conserving the vessels that form the duct's blood supply. Careful opening of the duct, with deference to these vessels, through its natural coverings without any undue stripping, and closure over an indwelling tube that diverts the bile to its normal portal of exit are two basic principles that must be borne in mind if unhappy sequelae of operations on the common duct are to be averted.

The parchment-like nature of the common duct can best be understood by realizing that no suture, be it ever so fine, can be placed in a common duct that will not leak; that even the smallest needle aspiration of the duct, be it ever so fine or be it ever so slanted, will leak. A better understanding of the intimacy of common duct vascularization and the adoption of surgical methods in greater deference to its principles, may indeed be the light at the end of the tunnel.

The Action of Bile on Devitalized Tissues.—Bile is, on the whole, a kindly fluid, and will find its way home if the possibility exists. This is in direct contrast to such external leakages as those of urine and saliva. Bile is nonirritating to normal

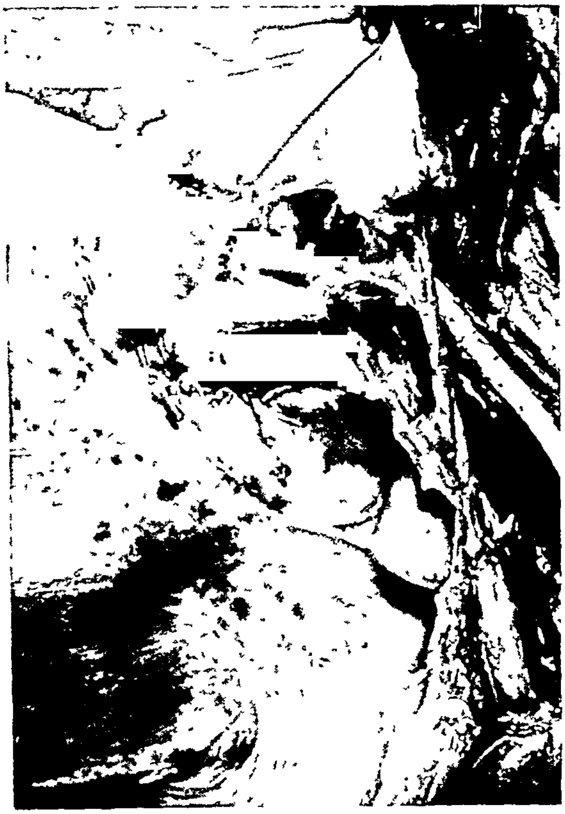

Fig. 1.—Wilkie's supraduodenal artery, from which large choledochal artery is seen ascending on lateral surface of common duct.

tissues, and many a cystic duct ligature has slipped off, causing a huge accumulation of bile free in the abdomen, without in most instances even the knowledge that it has occurred unless drainage has been employed. In the absence of infection it is as innocuous as serum or ascitic fluid. The much-feared bile peritonitis bears a name that does not convey a true impression. Bile peritonitis is just ordinary infective peritonitis. In the absence of continued soilage, however, peritonitis tends to localize, but, if there is a substantial bile leak in the presence of infective peritonitis, the bile, from sheer quantity, acts as a vehicle of transport to every remote recess of the abdomen. Bile peritonitis is total peritonitis. Its great seriousness lies in its totality, not in anything sinister intrinsically referable to bile itself.

The continued action of bile on devitalized tissue is quite different from its action on normal tissue. Innocuous to normal tissue, it has a serious necrotizing effect on devitalized tissue. One might liken my concept of the action of bile on devitalized tissue to that of wolves in a pack, which work together in full synchrony of purpose as long as all goes well, but let one of the pack be wounded and the others turn upon him and devour him at once. So it is with the action of bile on devitalized tissue; the normally innocuous fluid exerts a necrotizing action on that area of the common duct which has become underprivileged from minimal vascular interference, with resultant fistula and subsequent stricture. If the blood supply to the major portion of the duct is interfered with, the action of bile sets up colliquative necrosis, which results in total destruction of the duct. In substantiation of this premise, the well-vascularized intrapancreatic portion of the duct and the intrahilar bifurcation are invariably intact.

In my opinion the wolflike action of bile on its damaged host explains clearly the total failure of such procedures as homografts, autografts, venographs and many end-to-end anastomoses; they simply disappear. The only type that will survive is a vascularized mucous-lined tube such as a defunctionalized loop of jejunum, and then only because it frustrates the action of bile on devitalized tissue.

Drainage of the Common Duct.—This presentation concerns only the manner in which a common duct is drained, and the various indications for drainage will not be discussed. Two simple principles, however, at once emerge. In any common duct that arouses enough suspicion to warrant exploration, that exploration is not complete without easy passage of a bougie through the ampulla of Vater into the duodenum. The extent to which the sphincter of Oddi[3] and the ampulla should be dilated is perhaps open to argument, but a minimum of 7 mm. should be mandatory, and persistent refusal of a 3 mm. bougie to pass is an indication for opening the duodenum. The second, less well established principle is that when a common duct is explored and found to be normal, simple closure of the duct, without any form of ductal drainage, should be carried out. While a simple drainage tube down the gallbladder fossa is advisable, merely opening a normal duct does not call for a T tube or other ductal drainage. Simple sutures suffice.

While devitalized tissue may be able, for a short time, to withstand the necrotizing action of bile, I am convinced that the time element is most important, and the longer exposure to bile action is permitted, the more certain is dense scar formation to follow. With this in mind, I cannot but maintain that the constant leak around a T tube or other tube emergent from the duct, acting for any length of time on the traumatized edges of the opening through which it emerges, is the most potent single cause of postoperative cicatricial formation or stricture. In consequence, I have for many years attempted to discredit the use of T tubes in biliary surgery.

Indwelling Common Duct Tubes.—This report is based upon 1936 operations, done by myself on the biliary tract, of which I have record up to the end of 1956. In 562 of these the common duct was explored openly; in 204, simple external catheter drainage was employed; in 97, simple primary closure was carried out, and in 261 an indwelling common duct tube was used. It is the last-mentioned group of 26 cases that I wish particularly to discuss. The obvious disadvantages of T tubes, apart from the longer exposure of sick tissue to bile action, need little comment. Diversion of the bile in whole or in part, lengthened hospitalization, occasional difficulties of removal, constant dressings, and the partial anchorage of the patient to the collection mechanism, as well as the unfavorable psychic impact of external drainage, are all factors to be considered.

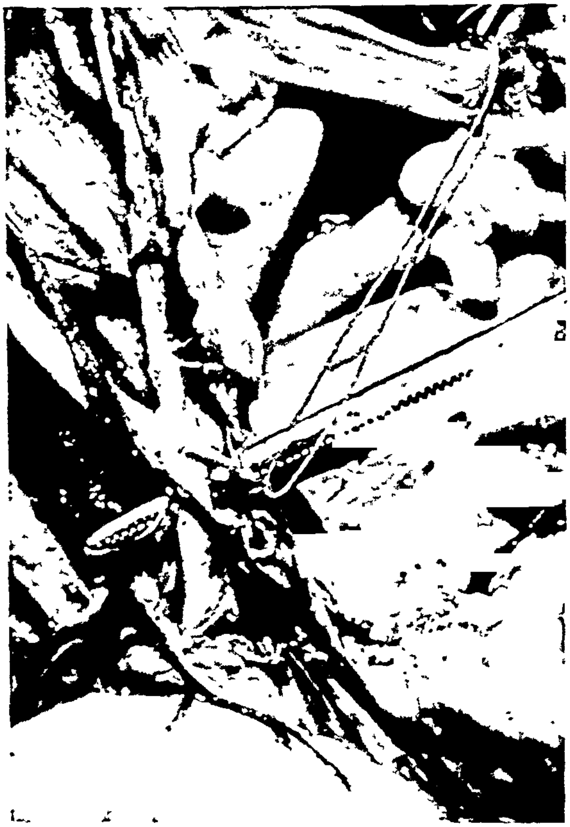

Fig. 2.—Tip of forceps almost touching common duct. Choledochal artery is clearly visible, descending from Wilkie's supraduodenal artery.

Indwelling tubes permit sound healing in ten days, shortened hospitalization, no tubes, dressings or external drainage and minimal disadvantages. Mass postoperative cicatrization is eliminated.

The most frequent question I have been asked is, "What kind of a tube do you use?" I find a simple segment of new red rubber catheter is best. It should be used as follows: After the duct has been thoroughly cleansed and the ampulla dilated to at least 7 mm., preferably 9 mm., the duct replacement will ever be wholly successful that fails to utilize this perfectly vital lower end of the duct by anastomosing it to the lower end of whatever vital substitute loop is used. The difficulty of the procedure and the discrepancy in size of the two structures must be overcome to provide the lower end of the substitute loop with its normal sphincter mechanism of control, and the bile must ultimately be made to enter the bowel through the ampulla of Vater. Only then is the tragedy of recurrent febrile episodes likely to be averted.

What Has Happened to These Indwelling Tubes?—Of 260, one has remained stuck fast for eleven years but has caused no trouble. Since the duct had been practically destroyed, however, if the tube ever does pass or disintegrate a serious problem may arise. Four tubes have required removal on the assumption that they were obstructed; only two of the four actually were obstructed with muco-bile plugs. The projecting portion of the tube within the duodenum almost invariably becomes encrusted with a barnacle-like mass of detritus from the intestinal canal, but there is a sharp line of demarcation between the intraductal and the intraduodenal portion.

The intraductal portion of the expelled tube has always been quite clean. In 1 case severe hemorrhage occurred on the fifth day, coming from the duodenal area and ceasing on removal of the tube. In 3 cases there was severe colic a month after the operation, requiring morphia; all tubes were passed by rectum on the following day. One patient, who had previously undergone gastric resection with an anterior Billroth II operation, vomited his tube without incident on the seventeenth postoperative day. In 5 cases febrile reactions developed, thought to be due to subphrenic abscess, two of which were identified as such and drained. The fact that in only 2 of the 260 cases in which indwelling tubes were used did common duct strictures, identifiable as such, develop and require secondary operation, is so far below the average when T tubes are used as to leave no shadow of doubt that the indwelling tubes carry a much lower morbidity rate than does any other type of drainage of the biliary tract.

The many fears and objections that have been presented to me, such as blockage of the pancreatic ducts, ulceration of the ampulla of Vater with subsequent cicatrization and stricture, irritation of the duodenum, etc., are in the same category as the tragedies that Mr. Bernard Baruch has found besetting his life; most of them never happened. I have never seen evi-

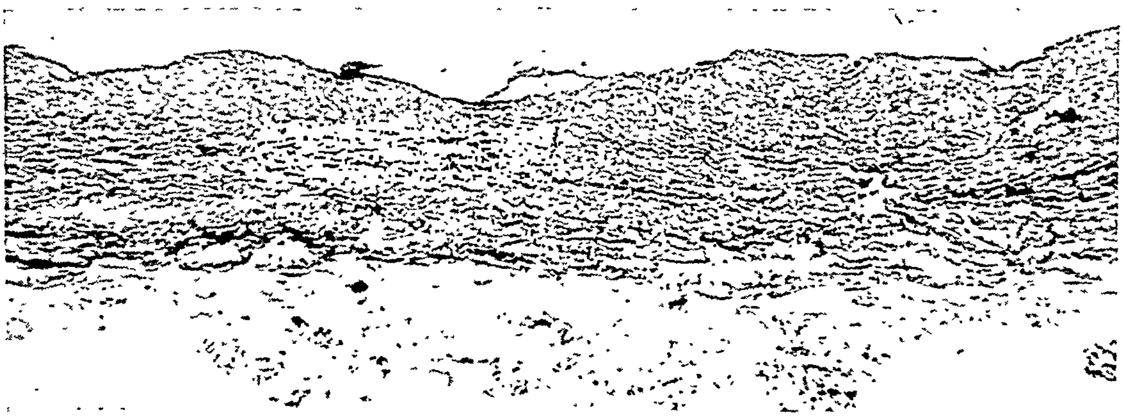

Fig. 5.—Common duct in longitudinal section, showing almost complete absence of musculature in this parchment-like structure.

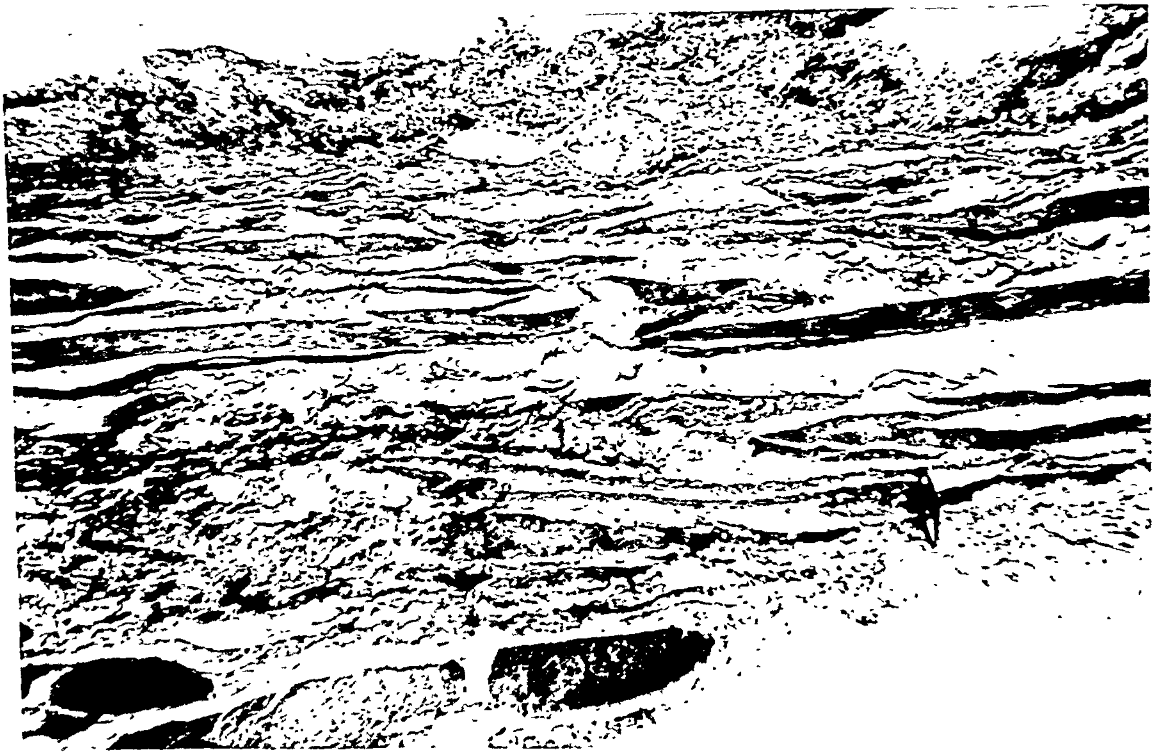

Fig. 6.—Longitudinal section of area of ampulla of Vater, showing abundant concentrated musculature of ampulla compared to absence of musculature in common duct proper.

dence of obstruction of pancreatic ducts following the use of indwelling tubes. Patients should, however, be warned that a tube was purposely left in and will ultimately pass. Failure to do this or to have the fact properly recorded on hospital records may lead to suggestions of oversight or to liability.

SUMMARY

The author is convinced that the vast majority of postoperative duct strictures and other unhappy sequelae are largely preventable. It is so very easy when massive duct destruction is observed at a secondary operation, the primary procedure having been carried out elsewhere, to point out what an ignoramus one's predecessor must have been. The argument loses much of its humor when one is one's own predecessor. Criticism of a predecessor is probably wholly undeserved.

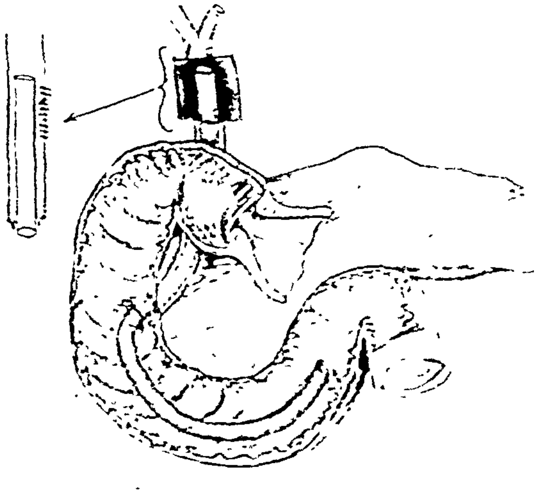

Fig. 7.—Indwelling tube recommended for use in replacement procedure instead of usual T tube.

Not by any means is the visible artery on the supraduodenal part of the common duct necessarily the only artery of supply to the duct, but in a reasonable percentage of cases it may be and it is in these that a "bleeder" thoughtlessly ligated may prove disastrous.

"Stripping" a common duct of its enveloping sheath for greater visibility cannot be too strongly condemned. Scouring with a small gauze swab is never necessary and frequently harmful. The "feet of the millipede" are needlessly pulled out and a wall wholly fibrous, containing no muscle, can ill afford such treatment. Delayed sequelae are the inevitable result.

A much more careful approach to vascular architecture of the common duct will largely eliminate harmful and dangerous sequelae.

The action of bile on devitalized tissue causes extensive necrotization with dense fibrous tissue formation. Few adhesions compare in density with those in the area of a biliary leak. All possible methods of minimizing the time that bile is allowed to be in contact with such tissue should be employed, and in my opinion T tubes and other emergent tubes that are allowed to remain in place for weeks prepare the soil for exactly the situation of dense fibrosis which it is most important to prevent.

Careful opening of the duct, with deference to its vascularity, through its natural coverings without any undue stripping and the closure of the duct over an indwelling tube that diverts the bile to its normal portal of exit and cuts down to a few hours or days the time when even small amounts of bile are allowed to come into contact with gallbladder fossae and duct environs, will, in my opinion, become the operation of the future for disease of the biliary tract.

ZUSAMMENFASSUNG

Der Verfasser ist überzeugt, dass die grosse Mehrzahl postoperativer Gallengangsstrikturen und anderer unerfreulicher Folgeerscheinungen sich in hohem Masse vermeiden lässt. Es ist sehr leicht, auf die Unfähigkeit eines chirurgischen Vorgängers hinzuweisen, wenn man beim zweiten Eingriff schweren Veränderungen des Gallengangs begegnet, und wenn der erste Eingriff an anderem Orte erfolgt ist. Wenn man selbst der Vorgänger ist, ist die Situation schon viel weniger komisch. Kritik am Vorgänger ist wahrscheinlich völlig unberechtigt.

Die sichtbare Arterie am supraduodenalen Abschnitt des Choledochus ist keineswegs notwendigerweise das einzige den Gang versorgende Gefäss, in einem erheblichen Prozentsatz der Fälle jedoch kann das so sein, und dann kann sich die gedankenlose Unterbinlung eines "Bluters" als verheerend erweisen.

Das "Abziehen" der Umhüllungen des Choledochus zum Zwecke seiner besseren Darstellung kann nicht schwer genug verdammt werden. Das Abschrubben mit einem kleinen Gazetupfer ist niemals notwendig und oft schädlich. Die "Füsse des Tausendfüsslers" werden unnötigerweise herausgezogen, und eine völlig fibröse, keine Muskeln enthaltende Wand verträgt eine derartige Behandlung schlecht. Späte Folgeerscheinungen sind das unvermeidliche Resultat.

Durch erhöhte Vorsicht beim Zugang zum Gefässapparat des Choledochus wird man unangenehme und gefährliche Folgeerscheinungen in grossem Umfang ausschalten.

Die Wirkung von Galle auf devitalisiertes Gewebe führt zu umfangreicher Nekrotisierung mit Bildung von dichtem Bindegewebe. Nur wenige Verwachsungen lassen sich an Dichtigkeit mit denen vergleichen, die im Gebiet des Lecks eines Gallengangs entstehen. Es sollte kein Handgriff versäumt werden, um die Zeit des Kontakts von Galle mit solchem Gewebe auf ein Minimum abzukürzen. Der

Verfasser glaubt, dass T-Rohre und andere Galle drainierende Katheter, die wochenlang liegen gelassen werden, den Boden zur Entwicklung gerade dieses dichten Bindegewebes bilden, dessen Vorbeugung er für äusserst wichtig hält.

Der Verfasser glaubt, dass die vorsichtige Eröffnung des Gallenganges unter sorgfältiger Berücksichtigung seiner Gefässversorgung durch seine natürlichen Hüllen hindurch ohne übermässiges Abschrubben und die Schliessung des Ganges über einem liegenbleibenden Drain, der die Galle auf ihrem normalen Abflusswege ableitet und den Kontakt auch nur geringer Mengen von Galle mit dem Gallenblasenbett und den Umgebungen des Ganges auf wenige Stunden oder Tage einschränkt, die Operation der Zukunft zur Behandlung von Erkrankungen des Gallengangssystems sein wird.

RÉSUMÉ

La grande majorité des rétrécissements post-opératoires du canal biliaire ainsi que d'autres séquelles malencontreuses pourraient être évités. Il est si simple, en présence d'une destruction massive du canal au cours d'une réintervention—la première opération ayant été pratiquée par un collègue,—d'accuser son prédécesseur d'incapacité totale. Mais cet argument perd beaucoup de son humour si l'on est soi-même son propre prédécesseur. La critique du prédécesseur est probablement tout à fait injustifiée.

L'artère visible sur la partie supraduodénale du canal n'est en aucune façon nécessairement sa seule artère nourricière; mais elle peut l'être dans un pourcentage raisonnable de cas, et c'est dans ces cas qu'une artère inconsidérément ligaturée peut provoquer un désastre.

Le fait de "dépouiller" un canal de ses gaînes protectrices en vue d'une meilleure visibilité ne saurait être condamné assez sévèrement. Le tamponnement n'est jamais indispensable et il est souvent néfaste; une paroi entièrement fibreuse, sans muscle, ne supporte guère un tel traitement. Il en résulte d'inévitables séquelles tardives.

Une voie d'approche beaucoup plus délicate de l'architecture vasculaire du canal s'impose en vue d'éliminer au maximum des séquelles dangereuses.

L'action de la bile sur un tissu dévitalisé provoque une nécrose étendue avec formation dense de tissu fibreux. Il est peu de fibroses aussi denses que celles se situant au niveau d'un suintement biliaire. Il faut recourir à toutes les méthodes possibles afin de réduire le temps permettant à la bile d'entrer en contact avec un tel tissu, et l'auteur estime que les tubes en entre autres maintenus en place durant des semaines, préparent précisement le terrain à une fibrose dense qu'il est de toute importance d'éviter.

A son avis, l'opération de l'avenir pour les affections de la vésicule biliaire consiste en l'ouverture prudente du canal en ménageant sa vascularisation et sans "dépouillement" injustifié de ses gaînes; fermeture du canal par-dessus un tube déversant la bile vers sa sortie portale normale. Cette technique permet de réduire à quelques jours ou même à quelques heures le temps pendant lequel des quantités même infimes de bile pourraient entrer en contact avec la fossette cystique et les environs du canal.

RIASSUNTO

L'autore è convinto che tutte o quasi le stenosi post-operatorie siano prevenibili. Durante un reintervento sulle vie biliari si possono trovare ampie perdite di sostanza del coledoco, dovute ad un precedente intervento eseguito altrove; le critiche al predecessore sono molto spesso immeritate.

Non sempre l'arteria visibile nella porzione sopraduodenale del coledoco è l'unica

arteria che lo irrora, ma spesso è così e in tale caso la sua legatura può essere disastrosa.

Anche il denudamento del coledoco dal suo rivestimento mon sarà mai condannato abbastanza; la sua dissenzione con tamponi di garza non è mai necessaria e spesso è pericolosa; si avranno inevitabilmente dei postumi, mentre un'accurata osservazione dell'architettura vascolare del coledoco potrà eliminare in gran parte ogni inconveniente.

Lá bile, agendo su tessuti devitalizzati, provoca delle necrosiestese con formazione di tessuto cicatriziale; poche aderenze sono paragonabili, per compattezza, a quelle che si producono in conseguenza degli stravasi di bile. Bisogna far in modo di ridurre al minimo il tempo durante il quale la bile rimane a contatto con i tessuti; l'autore ritiene che i tubi a T e tutti gli altri tubi che comunemente vengono usati e tenuti in posto per settimane preparino il terreno alla fibrosi, che è proprio l'inconveniente da evitare in ogni modo.

Egli pensa che l'intervento ideale nelle malattie delle vie biliari sia rappresentato da un'accurata apertura del coledoco, rispettando la vascolarizzazione e passando attraverso il suo naturale rivestimento senza asportarlo, e dalla successiva chiusura su tubo di protesi che derivi la bile verso il suo scarico naturale; verrà ridotto a poche ore o giorni il tempo in cui anche piccole quantità di bile vengono a contatto con le strutture circostanti.

RESUMEN

Cree el autor que la mayor parte de las estrecheces ductales postoperatorias y algunas otras secuelas pueden ser evitadas. Cuando en una segunda operación se encuentra una destrucción masiva del colédoco consecutiva a una primera practicada en otro servicio puede pensarse que el primer cirujano no sabemos cómo era. Esta afirmación pierde algo de su humor cuando el cirujano predecesor es uno mismo. Por esto la crítica sobre el cirujano que hizo la primera intervención es del todo inmerecida.

De ninguna manera es cierto que la arteria visible sobre la parte supraduodenal del colédoco sea la única arteria nutricia de éste, pero en una importante cantidad de casos debe admitirse que la ligadura, sin pensar más, de este vaso que sangra puede resultar desastrosa.

El mondar un colédoco de su vaina envolvente para lograr una sibilidad mayor no debe ser demasiado vivamente condenado. Nunca es necesario frotar con una gasa, y sí muchas veces peligroso. Es inecesarío arrancar las "patas del ciempiés" y una pared exclusivamente fibrosa, sin fibras musculares aguantará penosamente este trato. Las secuelas tardías serán la consecuencia inevitable.

La disección muy cuidadosa de las estructuras vasculares del colédoco evitará las secuelas nocivas y peligrosas.

La bilis, al actuar sobre tejidos desvitalizados, origina desvitalizaciones extensas con formación de tejido fibroso. Pocas adherencias pueden compararse en densidad con las que suelen formarse en torno a las vías biliares. Todos los medios que acorten el tiempo de contacto de la bilis con estos tejidos deben ser empleados y en la opinión del autor los tubos en T, y otros tubos de drenaje que se dejan aplicados por varias semanas predisponen a la formación de la fibrosis intensa que es lo que precisamente debe evitarse.

La apertura cuidadosa del ductus con atención a su vascularización a través de sus cubiertas naturales sin mondarlo bruscamente y el cierre meticuloso sonre el tubo que se deje para desviar temporalmente la bilis acortando el tiempo de contacto de la bilis con las estructuras cicundantes debe ser en adelante, de acuerdo con el autor, la técnica de elección en la cirurgía para las enfermedades biliares.

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Patients have now for a full century been accustomed to having their physician count the pulse and listen to the heart. They expect this as part of their examination. But in recent years, if there is any irregularity in the heart-beat, the physician straps a pulse writer on the wrist and takes a tracing of the pulse, or the electrocardiogram is utilized and an "electrocardiogram" made. The development of these newer instruments of precision is an interesting story and a quite modern one.

For a generation or more the physician had no method of diagnosing heart-disease except by the use of the stethoscope. He listened to the beating of the heart, and if the sounds were clear and sharp, the patient was told his heart was normal. If the heart-sounds were accompanied by murmurs, he was told he had valvular heart-disease. If the patient's heart was irregular in its beating, the physician was quite at sea. The doctor, if of a sanguine temperament, usually told his patient to forget it; if he were of a more cautious and apprehensive disposition, he put him to bed.

This uncertainty led to grave errors in diagnosis. Many patients who had loud heart-murmurs seemed not to suffer the least inconvenience, but worked hard until ripe old age. Some patients with irregular hearts who were told to forget it died suddenly, to the great distress of their friends and to the damage of their physicians' reputations. Other patients who were told to keep to their beds because their hearts were irregular stayed in bed for a time, then got up and went about for years, working hard and carrying their irregularity with them.

—*Major*

Intra-Operative Choledochoscopic Study

HEINZ GRIESSMANN, M.D., F.I.C.S.*
NEUMUNSTER-HOLSTEIN, GERMANY

IN 1953, at a meeting of the German Society of Surgeons in Munich, Wildegans of Berlin showed for the first time a new instrument he had devised, the choledochoscope. In 1956 he published his first experiences with the choledochoscope technic, pointing out the diagnostic possibilities of intra-operative endoscopic study of the bile ducts in the presence of cholelithiasis. He closed this contribution with the following words: "May this information stimulate a critical testing and use of the endoscopy."

Since April 1956 I have used the choledochoscope in all cases in which it has been anatomically possible to introduce it into the bile ducts. At the time of writing I have made unexpected discoveries in nearly 100 cases in which the instrument was employed, and I present a brief account of my experience.

Choledochoscopes (15 to 25 Charriere) are now available. The choledochoscope is easy to operate. It permits a survey of form and position of passages, changes of the mucosa, size and form of the papilla and, above all, the amount, size and position of stones and stone slime. Of 49 cholecystoscopic studies, unexpected observations resulted in 23 cases; in 14 cases the results led to change of the original plan of operation. The choledochoscope represents a great advance in the surgery of the gall passages. It will make cholangiographic studies superfluous in many cases and will help to lower the incidence of recurrent operations.

The choledochoscope originally developed by Wildegans is available in sizes 18, 20 and 25 Charrière.[1] Size 18 will best meet practical requirements. Recently another choledochoscope has been developed,[2] to which one can attach, by screwing them onto the main instrument (the shaft), tubes of various sizes Charrière. With the size 15 tube, therefore, it is possible to use the instrument also for examining the smaller ducts.

Since their introduction the choledochoscopes have been considerably improved. A small forceps can be passed as if through a cystoscope, either with sharp branches for obtaining a biopsy specimen or with dull branches to remove stones from the common duct, as well as the hepatic duct and its branches (Fig. 1).

It is also possible to slide a wire sling through the scope if, for instance a stenotic papilla of Vater has to be split electrically (Fig. 2). In addition, the instrument can be used with button-tipped wire for coagulation. Because of continuous rinsing with sterile solutions through the instrument the surgeon has always a clear view during an operation within the bile ducts. With this instrument he can see not only the entire length of the common duct and the papilla of Vater but the hepatic duct and its different branches

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From the University of Kiel.
*Chief of Surgical Service, City Hospital, Neumunster-Holstein.

Submitted for publication Aug. 18, 1958.

[1] Manufactured by Sass, Wolf & Co., Berlin.

[2] Manufactured by Richard Wolff, GmbH, Knittlingen-Wurttenburg, Germany.

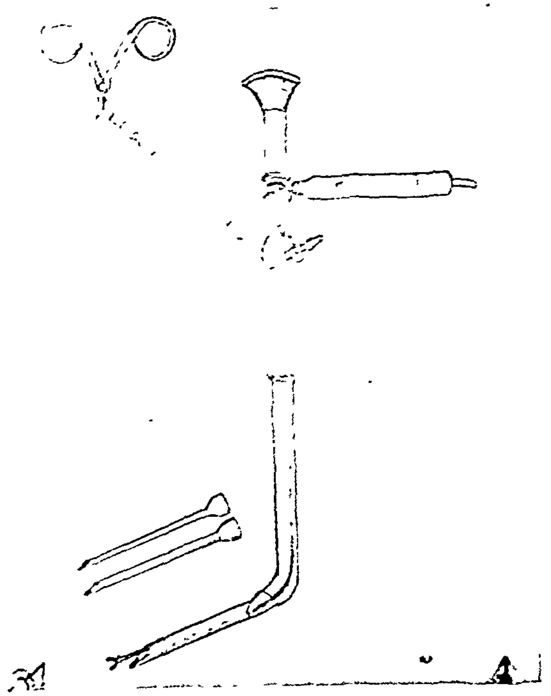

Fig. 1.—Choledochoscope developed by Wildegans (see text).

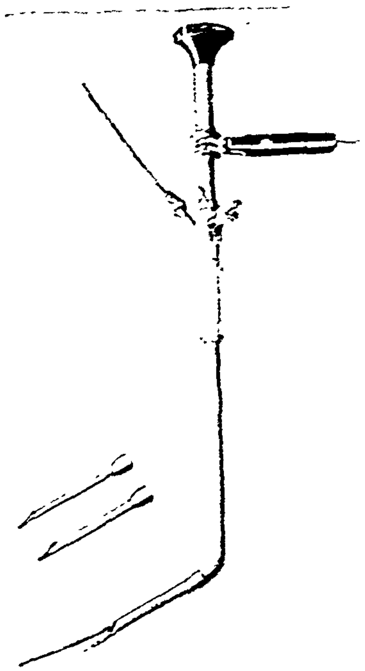

Fig. 2.—Choledochoscope developed later (see text).

within the depths of the liver. All inflammatory changes of the mucosa and all tumor formations are visible. Most important, however, is the size, number and shape of calculi.

The instrument is easy to operate. One who knows how to manage the cystoscope will be familiar with the technic of endoscopic study of the bile ducts in a short time. As a rule I use the choledochoscope after the common duct has been opened, when the width of the orifice makes introduction easily possible.

Of my first 49 cases, as is shown in the accompanying table, more or less fully developed jaundice was present in 24. In 8 cases intermittent jaundice was observed, and in 17 there were no icteric symptoms. Of the 49 cases there were 23 in which the instrument was introduced only once, while in 26 cases it was necessary to insert the instrument several times for inspection, etc. On one occasion, the common duct being heaped with stones, it was necessary to introduce the instrument fifteen times to make sure that even the smallest particles of calculi had been removed from the intra-hepatic ducts. Only by using the choledochoscope can one quickly and exactly determine the cause of a bad condition of the papilla of Vater (inflammatory changes, stone impaction.

Data on 49 Choledochoscopic Studies

Total Cases	*Jaundice Present*	*Intermittent Jaundice*	*No Jaundice*	*Choledochoscopic Study During Operation*		*Plan for Operation Changed*	*Unexpected Observations*
49	24 cases	8 cases	17 cases	Once	23 cases	14 cases	27 cases
				Several times	26 cases		

neoplasm, etc.). Of the total of 49 cases, unexpected observations resulted in 23, and in 14 cases the observations led to a change in the original plan of operation.

If the cystic duct is wide enough, one may introduce the instrument through it and look into the common and hepatic ducts to decide whether or not the common duct must be opened.

Before I started using the choledochoscope I always made preoperative intraoperative cholangiographic studies by means of either single or serial films. As all surgeons know, in some cases the calculi cannot be visualized, especially if they are in the intrahepatic ducts. Valuable as intra-operative cholangiographic study used to be, it becomes useless, at least in these cases in which satisfactory visualization and examination of the bile ducts can be climaxed by using the scope.

It is not my intention to list single cases here, but it is safe to say that so many surprises and unexpected discoveries result from choledochoscopic study that those who employ it will not only consider it a great enrichment in surgical technic but will be convinced that the number of repeated operations can be lowered considerably.

RÉSUMÉ

Lón dispose maintenant de cholécystoscopes du type 15-25 Charrière dont la technique d'utilisation est simple. Ils permettent d'observer la forme et la position des voies biliaires, les modifications de la muqueuse, la dimension et la forme de la papille, et, surtout, le nombre, la dimension et la position des calculs et du limon vésiculaire. Sur 49 examens cholécystoscopiques, 23 cas ont révélé des observations inattendues, ayant conduit dans 14 cas à une modification du plan opératoire prévu. Le cholécystoscope représente un grand progrès dans la chirurgie des voies biliaires. Il rendra superflue la cholangiographie dans de nombreux cas et contribuera à réduire la fréquence des réinterventions chirurgicales.

RESUMEN

Se dispone ya de coledocoscopos de los números 1 al 25 Charriere. Proporcionan tales instrumentos información visual sobre la forma y proporción de los conductos, alteraciones, de la mucosa, tamaño y forma de la papila y, sobre todo, número, tamaño y posición de cálculos y barro biliar. En 49 estudios de colecistoscopias se han encontrado 23 observaciones inesperadas; en 14 casos estos resultados hicieron cambiar el plan de la operación. El coledocoscopio representa un gran progreso en la cirugía de las vías biliares. Esta técnica evita muchas colangiografías y ayuda a disminuir la frecuencia de las recidivas.

ZUSAMMENFASSUNG

Choledochoskope von Kalibern zwischen 15 und 25 Charrière sind jetzt verfügbar. Die Handhabung des Instrumentes ist leicht. Es ermöglicht, die Form und Lage der Gallenwege, Veränderungen der Schleimhaut, Grösse und Form der Papille und vor allem die Menge, Grösse und Lage von Steinen und Sand in den Gallenwegen zu untersuchen. Unter 49 cholezystoskopischen Untersuchungen kam es in 23 Fällen zu unerwarteten Beobachtungen; diese führten in 14 Fällen zu Änderungen des ursprünglichen Operationsplanes. Das Choledochoskop stellt einen grossen Fortschritt in der Chirurgie der Gallenwege dar. Es wird in vielen Fällen cholangiographische Untersuchungen überflüssig machen und zur Herabsetzung der Zahl von Nachoperationen beitragen.

RIASSUNTO

Sono stati costruiti dei coledocoscopi del numero 15-25 Charrier, molto facili da usare, con cui è possibile studiare la forma

e la posizione dei vari tratti, le modificazioni della mucosa. le dimensioni e la forma della papilla, e — soprattutto — il numero, la grandezza e la posizione dei calcoli e della sabbia biliare. Su 49 colecistoscopie vi furono 23 reperti inattesi, e 14 volte fu necessario modificare il piano operatorio. Il coledoscopio rappresenta una importante conquista nella chirurgia delle vie biliari; esso finirà per rendere inutile la colangiografia in molti casi e aiuterà a diminuire considerevolmente i casi di recidiva.

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Most surgeons pass through three stages. In the first they are young and enthusiastic. stored with an immense amount of information that they have acquired in passing their Fellowship and Mastership examinations. full of ideas that they mean to work out. safe and skilful but stereotyped operators. very poor and entirely unknown. In the second their knowledge has been coloured by personal experience. and if they are made of the right stuff. has been built up into surgical wisdom: their ideas have been cultivated and have borne fruit in contributions to surgical science. and in a more general way in an outlook that is their individual contribution to the store of their time: their technical work is polished and perfected by constant practice. the elimination of unnecessary steps. and the adoption of all that they consider best in the work of others. and the knowledge borne of experience which teaches the particular device best suited to the particular problem: they get plenty of patients from those who know the value of their work. and they make a reasonable income. most of which is spent in educating their children. In the third stage we may picture them graced with a title. operating for large fees on the nobility and plutocracy and enjoying a brief period of real prosperity. rising with a fortunate few to a third of the income of a successful barrister: they have ceased to modify their ideas and their operating is perfect and standardized.

—*Ogilvie*

Elective Subtotal Gastrectomy for the Treatment of Peptic Ulcer

ALFREDO LEPORE, M.D.,* AND JOHN A. McCABE, M.D., F.A.C.S.**

BROOKLYN, NEW YORK

SINCE Billroth performed the first gastrectomy on a human being on Jan. 29, 1881, thirty-eight additional methods for restoring the continuity of the gastrointestinal tract have been developed. The fact that so many procedures have been employed demonstrates that the problem of treatment of ulcer disease is still somewhat unsettled. All those procedures have the same purpose: to remove the ulcer and achieve achlorhydria.

Recently, much criticism has been directed even toward those procedures that have withstood the test of time, to the extent that other procedures have been added, most of which include the section of the vagus nerve. We refer to gastroduodenostomy with vagotomy, gastrojejunostomy with vagotomy, antrectomy with vagotomy and, most recently, pyloroplasty with vagotomy. It is not the purpose of this communication to discuss the merits or the disadvantages of the aforementioned procedures; rather, we present the experience of St. Catherine's Hospital in dealing with surgical treatment of the peptic ulcer, hoping to bring some light to the still unsolved problem.

This article is a review of 303 cases in which the patients underwent subtotal gastrectomy for peptic ulcer.

A modification of the open technic employed in closing the duodenal stump is described, and the conditions that govern the decision whether to resect or to by-pass the ulcer are discussed. The results of treatment, immediate and as observed in follow-up studies, are presented.

Clinical Material.—From 1950 to 1957 inclusive, 362 subtotal gastrectomies were performed in this institution. Some were done by members of the general surgical staff and some by the surgical residents, the latter always under the supervision of a staff member. Of the 362 operations, 182 were done for duodenal ulcer, 109 for gastric ulcer, 11 for gastric and duodenal ulcer, 15 for multiple ulcers and 15 for multiple lesions. Patients in the last-mentioned category were admitted for the treatment of ulcer, either duodenal or gastric, but at operation an associate lesion was observed and was later confirmed by the pathologic report. There were 15 such cases. There were 4 cases of duodenal diverticulum, 4 cases of pseudodiverticulum, 1 case of hemangioma of the pyloroduodenal juncture, 1 case of neurofibroma of the antral region, 1 case of jejunal papilloma, 1 case of lymphangioma of jejunum and 2 cases of polyps of the pylorus. There were 9 cases of hypertrophic gastritis and 2 cases of chronic hemorrhagic gastritis. There were 19 cases of resectable carcinoma of the stomach (Table 1).

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*Formerly Chief Resident in Surgery, St. Catherine's Hospital, Brooklyn; now Resident in Cardiovascular Surgery, St. Francis Hospital and Sanatorium, Roslyn.

**Director of Surgery, St. Catherine's Hospital, Brooklyn.

From the Department of Surgery, St. Catherine's Hospital, Brooklyn.

Submitted for publication Nov. 11, 1958.

Indications.—The indications for the operation are listed in Table 2. "Intractable" ulcers were those causing pain that was not relieved by medical treatment. It has always been a rule in this institution to give a patient with duodenal ulcer a trial with a medical regimen for at least six to eight months, and to one with gastric ulcer, a trial of four to six weeks, before operation is contemplated. "Obstruction" indicates a long history of peptic ulcer, with scarring and stenosis of the pylorus. By "perforation" we indicate patients in whom the ulcer had perforated into the peritoneal cavity, permitting the gastric and duodenal contents to enter this cavity. "Bleeding" indicates cases in which, either in the hospital or before admission, there were episodes of repeated gastrointestinal bleeding that required surgical treatment. Under the term "combined" are listed patients who had a past history of either obstruction or intractability.

TABLE 1.—*Classification of 362 Cases*

		Per Cent
Duodenal ulcer	182	50.27
Gastric ulcer	109	30.11
Gastric & duodenal ulcer	11	3.03
Multiple ulcer	15	4.14
Multiple lesions	15	4.14
Chronic hypertrophic gastritis	9	2.43
Chronic hemorrhagic gastritis	2	0.55
Carcinoma of stomach	19	5.24

TABLE 2.—*Indications for Operation*

		Per Cent
Intractability	181	50.00
Bleeding	86	23.75
Obstruction	59	16.29
Previous perforation	25	6.90
Combined	11	3.03

TABLE 3.—*Duodenal Ulcer (182 Cases)*

Male Patients: 150 *Age: 22 to 79*	*Female Patients: 32* *Age: 27 to 75*
20-29:4	20-29:1
30-39:22	30-39:4
40-49:36	40-49:9
50-59:71	50-59:14
60-69:13	60-69:2
70-79:4	70-79:2

TABLE 4.—*Gastric Ulcer (109 Cases)*

Male Patients: 85 *Age: 28 to 74*	*Female Patients: 24* *Age: 29 to 75*
20-29:1	20-29:1
30-39:12	30-39:1
40-49:30	40-49:9
50-59:24	50-59:11
60-69:17	60-69:1
70-79:1	70-79:1

Intractability was the most common indication for surgical intervention and occurred in 181 patients (50 per cent). The indication was obstruction in 59 patients (16.29 per cent); perforation in 25 (6.90 per cent), and bleeding in 86 (23.75 per cent). Eleven patients (3.03 per cent) have had signs referable to multiple indications. Of the 86 patients with gastrointestinal bleeding, the hemorrhage was massive in 40 and less than massive in 46.

Duodenal Ulcer.—There were 182 cases of duodenal ulcer (50.27 per cent) divided among 150 male and 32 female patients, with a ratio of 4.9:1. The youngest male patient was 22 years of age; the oldest, 79. The largest male group was composed of 71 patients aged 50 to 59. The youngest of the 32 female patients was 27; the oldest, 75. The largest female group comprised 14 women aged 50 to 59 (Table 3).

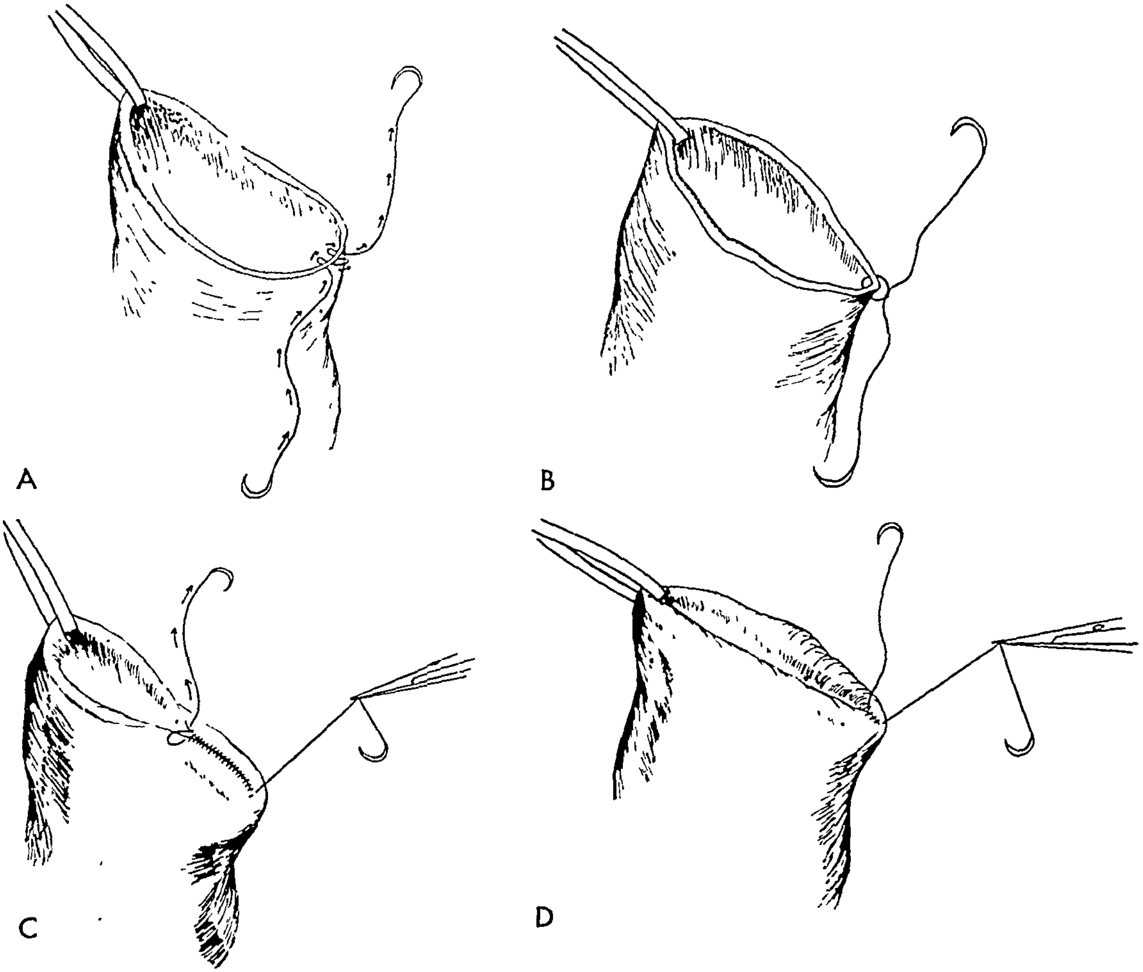

Fig. 1.—Closure of duodenal stump, commencing from right corner.

Gastric Ulcer. — Subtotal gastrectomy was required in 109 cases of gastric benign ulcer (30 per cent) during the same period, divided among 85 male and 24 female patients, a ratio of 3.54:1. The largest male group consisted of 30 patients between 40 and 49 years of age. The youngest was 28; the oldest, 74. The largest female group contained 11 women aged between 50 and 59. The youngest female patient was 29; the oldest, 75 (Table 4).

The 109 gastric ulcers were distributed as follows: 54 (49.54 per cent) in the lesser curvature; 38 in the pars pylorus (34.87 per cent); 9 in the prepyloric region (8.25 per cent); 6 in the antrum (5.5 per cent), and 2 in the greater curvature (1.74 per cent). See Table 5.

Notes on Technic. — Except in a few selected cases in which a Billroth I and a

TABLE 5.—*Location of Gastric Ulcers (109 Cases)*

		Per Cent
Lesser curvature	54	49.54
Pars pyloris	38	34.87
Prepyloric region	9	8.25
Antrum	6	5.50
Greater curvature	2	1.74

Hoffmeister procedure were performed, the anterior Polya, a modification of Billroth II, was the operation of choice. We secure a jejunal loop, carefully identified at the ligament of Treitz, to the remnant stomach in an isoperistaltic direction, with the efferent loop to the greater curvature and the afferent to the lesser curvature. We try to make the jejunal loop not too long because of the danger of kinking and, consequently, possible volvulus and torsion with intestinal obstruction, and not too short, for the purpose of preventing tension on the anastomotic line. In the earlier years of treatment of the group surveyed an almost routine posterior Polya was employed, but since several cases of partial and complete stomal obstruction occurred this method has been abandoned. An anterior anastomosis has been preferred ever since.

There is still much controversy as to whether the ulcer should always be excised or left behind. Many surgeons, among them Lahey, Lewisohn, Hinton, Marshall, Thompson and Stewart, maintain that removal of the ulcer bed is necessary for the cure of the ulcer in patients subjected to subtotal gastrectomy. Others, including Steinberg, McNealy, Colp, Reinhoff, Allen and Welch, have expressed the opinion that it makes no difference, provided high resection is done and all of the pyloric antrum removed. Certainly, removal of the ulcer should always be attempted. Nevertheless, in those cases in which the ulcer lies posteriorly, with erosion of the pancreas, and there is a possibility that entering the ulcer bed would impair the closure of the duodenal stump, the conservatism that some surgeons have shown with regard to this question is justified. Besides, in the former instances, the presence of pancreatitis and pancreatic abscess formation is quite evident.

No less hazardous are the cases in which there is a long history of pyloric stenosis and much inflammation and fibrosis are present around the ulcer bed, in which the duodenum is markedly displaced and foreshortened. In such cases the risk of injuring the common bile duct and the hepatic artery in closing the duodenal stump is a definite possibility. To avoid the fatal complication of transecting the common duct, Lahey and Marshall developed a method of exposing and intubating this duct structure with a T tube, so that relation of the ulcer bed to this structure may be visualized. In this institution, since we are unfamiliar with the method mentioned and share with other authors the opinion that excision of the ulcer is not essential provided the antrum is removed, the following policy is adopted: Patients who have uncomplicated ulcer of the anterior wall and patients in whom the ulcer lies posteriorly, but with the duodenum not fixed, transection of the duodenum is performed distal to the ulcer. In those instances in which the ulcer has excavated

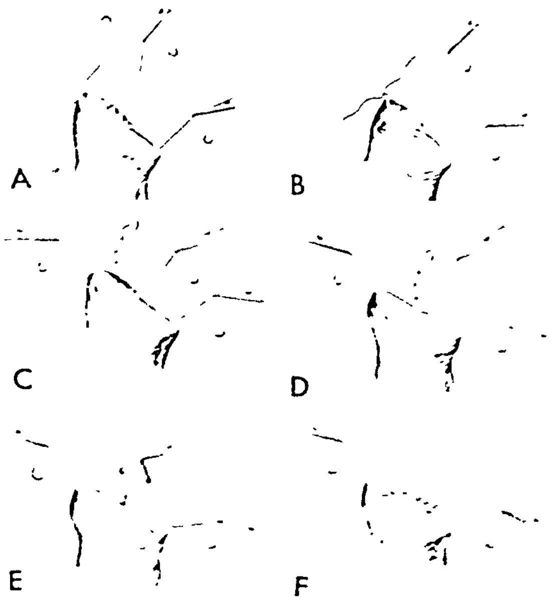

Fig. 2.—*A, B, C, D* and *E*, closure of duodenal stump, commencing from left corner. *F*, a second layer made by interrupted Lambert [illegible] silk, completing closure.

TABLE 6.—*Complications (303 Cases)*

Type	*No. of Cases*	*Deaths*
Atelectasis	15	0
Lobar pneumonia	13	2
Bronchopneumonia	4	0
Spontaneous pneumothorax	1	0
Pulmonary edema	1	1
Acute pancreatitis	1	0
Evisceration	9	0
Wound adhesions	5	0
Wound infections	10	0
Pelvic abscess	1	0
Gastric hemorrhage	4	1
Rectal bleeding	1	0
Partial stomal obstruction	12	0
Total stomal obstruction	2	0
Volvulus efferent loop	1	0
Leakage of duodenal stump	5	1
Rupture of gastro-jejunostomy	1	1

the pancreas and the duodenum is indurated and markedly displaced, transection of the duodenum is accomplished proximal to the lesion and the ulcer is left *in situ.*

It is our opinion that, unless the common duct is intubated as described by Marshall, removal of the ulcer leads to the injury of extrahepatic ducts. On the other hand, transection of the duodenum proximal to the ulcer gives the surgeon the advantage of having the first portion of the duodenum free, with its flexible walls easy to handle. It is our opinion that the removal of the ulcer is mandatory only in those cases in which it gives source to active massive bleeding.

Several methods are available for closure of the duodenal stump. A common one is that described by Parker-Kerr. In the past years there has been developed in this institution a modification of the open technic that has given most gratifying results, which are as follows.

The cut edges of the transected duodenum are grasped with Allis clamps on both edges. With one suture of No. 000 atraumatic chromic catgut with two small curved needles at both ends, the right corner is entered with an inverting mattress stitch. When this suture is tied, the corner is automatically inverted. The suture then continues according to the Connell technic until it reaches the middle portion of the duodenum; then entrance to the left corner is commenced with another suture, which continues in the same fashion until it meets the opposite one. At this point the two sutures are tied together. This constitutes the first suture layer, which ended in the middle of the duodenum with two different strings (Fig. 2E). Each string is then carried back across the inverted stump, as are continuous Cushing mattress sutures, and is tied to the end at the opposite corner. This constitutes the second suture layer. The final layer of closure is made by interrupted Lambert stitches of fine black silk. (Closure of the duodenum stump, commencing from the right corner, is shown in Figure 1; closure of the duodenum stump commencing from left corner, in Figure 2.) When the first suture layer is satisfactory, the duodenum is closed with only two layers, the second one being made by interrupted Lambert sutures of fine black silk (Fig. 1). When the closure is not satisfactory, the duodenum is closed in three layers and a piece of gastrocolic omentum secured on the closed stump.

About 70 to 75 per cent of the stomach is resected, according to careful measurement of the greater and lesser curvatures of all specimens. These measurements have given us the amount of stomach removed: 20.03 cm. in the greater curvature, and 10.94 cm. in the lesser curvature in resections done for gastric ulcer; 19.09 cm.

in the greater curvature and 10.12 cm. in the lesser curvature for subtotal gastrectomy done for duodenal ulcer.

Complications.—A list of complications is shown in Table 6.

1. It has been reported by several authors that one of the most frequent causes of postoperative death is peritonitis, caused by leakage from the duodenal stump. Thompson reported, in a series of 399 gastrectomies, 11 cases of duodenal stump dehiscence, in 7 of which the outcome was fatal. Avola of Boston City Hospital, in a series of 621 gastric resections, reported 13 cases of leakage from the duodenal stump, in 10 of which the patients died as a direct result of this complication.

Local factors, such as the application of crushing clamps over the stump to be inverted, the use of inflamed duodenal tissue and impairment of the blood supply to the duodenum, have been incriminated.

Bartlett and Lowell have emphasized the importance of systemic factors, such as anemia, hypoproteinemia and dehydration. "Mechanical factors" are those arising from pressure over the proximal loop, which reverts the increased pressure to the closed duodenal stump, which consequently blows out. Normally, intraduodenal pressure is about 15 cm. of water, and certainly, in this condition, its manometric value must rise considerably. Since we are aware of those factors, it is a policy of this institution, no matter how satisfactorily the duodenal stump can be closed, to place a Penrose drain near it, with the purpose in mind that, should a leakage occur, it could convert this leakage into a duodenal fistula. In our series, leakage occurred 5 times.

The following case demonstrates clearly how mechanical factors played a major role in causing dehiscence of the duodenal stump. It was a case in which the ulcer was excluded; it was penetrating into the pancreas, and no attempt was made to remove it. The patient did well until the fifth postoperative day, when pain and tenderness developed in the right upper abdominal quadrant and profuse bile drainage from the stab wound appeared. Persistent fever (temperature 101-103 F) was also noted. Roentgenograms showed elevation of the right hemidiaphragm. Because of the roentgen report and the persistent fever, an exploratory laparotomy was performed.

At exploration a huge subhepatic abscess, compressing and displacing the proximal loop, was found. The duodenal stump was located and proved to be almost completely opened. The abscess was drained; the duodenal stump was closed, and a small catheter was placed in it and brought out through a stab wound. Electric suction was applied over the catheter. The patient recovered in four weeks, when drainage ceased spontaneously as a result of the release of increased duodenal backward pressure, which had been created originally by the subhepatic abscess.

In 3 cases, as a result of small external duodenal fistulas, healing was spontaneous. In all cases, of course, careful electrolyte and fluid balance were instituted as soon as there was evidence of biliary drainage from the stab wound.

In the other case, the fifth one, the outcome was fatal. The patient had undergone gastroenterostomy elsewhere in 1931, and twenty years later a marginal ulcer developed. The ulcer was at the colonic side. The patient was operated on, and a dismantling of the earlier gastrojejunal anastomosis and subtotal gastrectomy was performed. He did well until four days after the operation, when copious biliary drainage from the stab wound appeared. Because the patient was becoming rapidly depleted despite all supportive measures, an exploratory laparotomy was performed. The duodenal stump was found completely opened; a portion of the afferent loop was attached to itself by dense postoperative adhesions. The stump was closed and the adhesions removed. The patient died, however, fifteen hours after the operation, of pulmonary edema.

2. Pulmonary complications were the most frequent. Thirteen patients had lobar pneumonia, and despite antibiotic therapy 2 of them died of this condition; 15 had atelectasis, but all recovered. In 1 a spontaneous pneumothorax developed thirteen days after the operation, which was treated with closed thoracotomy, with subsequent recovery.

3. There was 1 case of acute pancreatitis, in which icterus, an elevated temperature and an elevation of urine amylase and serum amylase, developed six days after the operation. It is to be pointed out that bile was present in the Levine tube. On the same day there was gastrointestinal bleeding (tarry stools and a large amount of fresh blood in the Levine tube). On the following day an exploratory laparotomy was performed. A hugh hemoperitoneum was located; the gastroenterostomy, for about 3 cm. in length, was explored; no definite sign of bleeding was detected, and the duodenal stump was closed. The hematoma was evacuated; the patient did well postoperatively and, a month later, was discharged fully recovered and completely cleared of icterus. The values for urine and serum amylase were normal.

4. There were 4 cases of postoperative gastric hemorrhage, in 1 case fatal. The patient in this case was operated on for duodenal ulcer, and the ulcer was removed. The hemorrhage occurred at home fourteen days after the operation and was so serious that she went into sudden shock. She was brought to the hospital, and a transfusion was given. On the following day she was operated on, and about 1500 cc. of blood was observed in the abdominal cavity. The gastrojejunostomy was interrupted and inspected for about 3 cm.; two bleeding points were located, which were thought to be responsible, in part, for the shock. Several hours after the operative procedure, there were two episodes of rectal bleeding that caused the patient's death, although several blood transfusions were administered.

5. As another category of complications following subtotal gastrectomy we mention those related directly to the gastrointestinal function. These complications occurred mostly in the earlier years of the group surveyed, at which time a posterior gastrojejunostomy was commonly performed. There were 14 cases of such complications, classified as "stomal obstruction." In 12 cases the obstruction was partial; in 2 it was total. It has been stated by several authors that no actual cause can be demonstrated. In this series, however, all the patients except 1 had undergone posterior anastomosis. We wonder whether the creation of a huge, floating and protruding septum into the gastric remnant could explain, in part, the difficulty in propulsion of the gastric contents into the small bowel, responsible for the stomal dysfunction. All patients recovered with repeated gastric suction, which relieves the obstruction.

There was 1 case of small bowel obstruction. The patient was reoperated on, and a kinking of the efferent loop, due to operative adhesions, was located. The removal of adhesions was enough to correct this disturbance, and the patient recovered.

6. There was 1 case of rectal bleeding. This occurred on the ninth postoperative day, and the patient recovered after being given blood transfusions.

7. There was 1 case of rupture of the gastrojejunostomy. The patient died on the fifth postoperative day of generalized fibrinopurulent peritonitis, confirmed by autopsy.

Results.—A better understanding of the postoperative care associated with proper preparation of the patient and the improvements of modern surgery has brought about a pronounced reduction in the mortality rate associated with subtotal gastrectomy. In this institution the mortality rate for elective subtotal gastrectomy for peptic ulcer has been 1.98 per cent. Up to the time of writing there have been no deaths among more than 90 patients subjected to subtotal gastrectomy. Our results are based upon 303 elective subtotal gastrectomies done either for duodenal or for gastric ulcer. We excluded from this survey patients on whom gastrectomy was done as an emergency procedure for active, massive bleeding, and patients who were operated on for carcinoma of the stomach. Of the 303 cases, the patients in 160 were followed up from two to five years postoperatively, with a percentile follow-up of 52.8 per cent; 143 patients were lost to follow-up, with a percentile of 47.2 per cent. Various authors report that the most distressing sequela in gastrectomized patients is the postgastrectomy or dumping syndrome, which manifests itself by weakness, sweating, nausea and occasional syncope, from fifteen to thirty minutes after a meal.

The incidence of this syndrome is differently reported in the literature. Capper and Butler of London set it at 11.97 per cent in a series of 660 cases; Custer, at 5.6 per cent in one series of 500 cases, and 12.5 per cent in a second series of 112 cases. Rauch reported a 45 per cent incidence in a series of 102 patients; Moore and associates, an incidence of 40.5 per cent with the Billroth I procedure and 44.3 per cent with Billroth II. In our series the incidence of the dumping syndrome was of 17.37 per cent, and the symptoms varied from mild to severe.

As for the relation between gastrectomy and loss of weight, many reports appear in the literature. Moore, Harking and others, comparing a Billroth I and a Billroth II resection, reported that 74.3 per cent of a series of 74 patients in which the Billroth II procedure was performed maintained preoperative weight or gained beyond the preoperative level.

In our series, 72 patients surpassed their preoperative weight, a percentage of 45 per cent. Forty-eight patients (30 per cent) neither gained nor lost weight. Forty patients (25 per cent) lost weight. Of those, 25 (15.62 per cent) had severe loss of weight and 15 (9.47 per cent) mild loss.

The incidence of marginal ulcer in our follow-up was 2.5 per cent.

RIASSUNTO

Viene fatta una rassegna di 303 resezioni gastriche subtotali per ulcera con chiusura del moncone duodenale secondo una tecnica speciale. Vengono anche esaminate le possibilità di asportare l'ulcera o di lasciarla in situ, e i risultati a distanza della cura.

RÉSUMÉ

Les auteurs présentent une étude portant sur 303 cas de gastrectomie subtotale pour ulcère peptique. Une modification de la technique ouverte de fermeture du moignon duodénal est décrite, et les conditions commandant le choix de la méthode à adopter sont discutées.

Pour terminer les auteurs analysent les résultats obtenus.

ZUSAMMENFASSUNG

Die Verfasser besprechen eine Serie von 303 Kranken, an denen eine elektive subtotale Magenresektion wegen Ulcus pepticum ausgeführt wurde. Eine Abwandlung der Technik bei Schliessung des Duodenalstumpfes wird beschrieben. Die Bedingungen, die zur Resektion oder zur Umgehung des Geschwürs den Ausschlag geben, werden erörtert.

Die Behandlungserfolge und Ergebnisse der Kontrolluntersuchungen werden mitgeteilt.

SUMARIO

Apresenta uma revisão de 303 pacientes que foram submetidos a gastrectomia subtotal eletiva para ulcera peptica descrevendo sua modificação do emprego da tecnica aberto para fechamento do côto duodenal. Descreve as indicações para tratamento conservador e cirurgico.

Apresenta tambem os resultados do tratamento e da sequencia dos pacientes.

RESUMEN

Este artículo se refiere a la revisión de 300 enfermos sometidos a gastrectomía por úlcera péptica. Se describe una modificación de la técnica abierta para el cierre del muñón duodenal. Se estudian las condiciones que rigen la decisión entre la resección ulcerosa o el by-pass.

Se termina con la exposición y resultados del tratamiento y su curso ulterior.

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Supervoltage Radiation Therapy of Carcinoma

JUSTIN J. STEIN, M.D., F.A.C.S., F.I.C.S., D.A.B.

LOS ANGELES, CALIFORNIA

FEW discoveries have been heralded by such widespread enthusiasm as was the discovery of "a new kind of rays" by Wilhelm Conrad Röntgen in Würzburg, Germany, on Nov. 8, 1895. In a short time many articles appeared concerning the use of these rays, and, surprisingly enough, articles soon appeared which pointed out the serious reactions and complications following their improper use.

The early primitive equipment produced from 50 to 100 Kv. In 1920, after the development of the Coolidge tube, an energy level of 200 Kv. was possible and high voltage therapy was begun, for now it was possible to reach all areas within the body.

In the 1930's, roentgen rays of 400 to 1,000 Kv. were produced, and the name "supervoltage therapy" was given to treatment in this range.

In 1940 Kerst constructed the first orbital electron accelerator to be utilized for therapy. In 1948 this type of therapy unit became available and produced rays with an energy of 22 Mev.

The supervoltage range is generally considered to be from 400 to 3,000 Kv. This range includes the Van de Graaff, cesium, cobalt and one-million and two-million volt resonance generator units.

With regard to carcinoma, it is quite possible that there may be no substantial increase in the five-year survival rate as a result of supervoltage and megavoltage therapy.

The value of this type of therapy is that a greater depth dose can be given, there is less cutaneous and osseous reaction, less radiation sickness, and the sick patient can certainly tolerate the treatment more comfortably.

Treatment must be planned and the course of radiation therapy carried out with precision. This may help to improve the end results.

No results of treatment are given in this paper, because only three years have elapsed.

It is quite possible that doses of cobalt 60 radiation, 15 to 25 per cent greater than those given with conventional roentgen therapy, are necessary to produce the same biologic effect. The author has found it necessary to increase the tumor dose, particularly for carcinomas of the head and neck.

With the advent of the Kerst betatron unit multimillion-volt units began to appear, and the usual range of kilovoltage was from 22 to 31 Mev. Linear accelerators were designed for kilovoltages from 4,000,000 upward and a synchroton with a kilovoltage of 70,000,000 electron volts is now in experimental medical use.

With the construction and sale of the large multimillion-volt units, a new question arose: What was the ideal or optimum kilovoltage range for the treatment of

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des Geschwürs den Ausschlag geben, werden erörtert.

Die Behandlungserfolge und Ergebnisse der Kontrolluntersuchungen werden mitgeteilt.

SUMARIO

Apresenta uma revisão de 303 pacientes que foram submetidos a gastrectomia subtotal eletiva para ulcera peptica descrevendo sua modificação do emprego da tecnica aberto para fechamento do côto duodenal. Descreve as indicações para tratamento conservador e cirurgico.

Apresenta tambem os resultados do tratamento e da sequencia dos pacientes.

RESUMEN

Este artículo se refiere a la revisión de 300 enfermos sometidos a gastrectomía por úlcera péptica. Se describe una modificación de la técnica abierta para el cierre del muñón duodenal. Se estudian las condiciones que rigen la decisión entre la resección ulcerosa o el by-pass.

Se termina con la exposición y resultados del tratamiento y su curso ulterior.

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The value of this type of therapy is that a greater depth dose can be given, there is less cutaneous and osseous reaction, less radiation sickness, and the sick patient can certainly tolerate the treatment more comfortably.

Treatment must be planned and the course of radiation therapy carried out with precision. This may help to improve the end results.

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With the construction and sale of the large multimillion-volt units, a new question arose: What was the ideal or optimum kilovoltage range for the treatment of

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deep-seated carcinomas, both for cure and for palliation? This question has not been answered, but many experienced radiotherapists are convinced that the practical range is somewhere between 1,000,000 and 10,000,000 electron volts. Many studies have been made to measure the relative biologic efficiency (R.B.E.) of the supervoltage and megavoltage units with that of conventional or orthovoltage units. Various tests to measure the relative biological efficiency include ferrous sulphate oxidation, induced lethal mutations in Drosophalia, lethal effects in the chick embryo, reduction in weight of the thymus, testes and spleen in mice, and the whole body radiation effect of the 50 per cent lethal dose in mice.

Paterson and his associates[1] noted that the 50 per cent lethal dose in 30 days in mice for 300 Kv. was 560.7 ± 21.0 rads and for the 4 Mev linear accelerator was 747.04 ± 36 rads. The resultant R.B.E. for rads in tissue was 0.750. The mean R.B.E. for their five experiments was 0.743 ± 0.28 rads.

Taplin,[2] comparing the R.B.E. of the 250 Kv. and CO^{60} units, found the 50 per cent lethal dose for thirty days in mice to be as follows: For cobalt 60, 750 ± 25 rads when given at the rate of 20 r per minute; when conventional 250 Kv. roentgen therapy was used, the dose required was 525 ± 25 rads.

The word "rad" was introduced in 1953 by the International Commission of Radiological Units. It denotes the energy absorbed per unit mass. One rad equals 100 ergs per gram of irradiated tissue, regardless of the kind of irradiation employed. The unit rad, or the absorbed dose, will soon come into more general clinical use, and one should be familiar with its significance.

Modern therapeutic radiology represents an ever-changing progressive attempt to improve technics and equipment and, most important, to attract well-trained persons who know the natural history of disease as it occurs in different parts of the body, and who have the judgment to deal with it properly. The only known methods of successfully eradicating cancer at present are surgical intervention and radiotherapy. Radiotherapists see the majority of patients with malignant tumors at some time during the course of the disease, either in consultation or in treatment for palliative purposes.

Although equipment for radiation therapy is constantly being improved, the important point in deciding where to send the patient is the question "How good is the radiotherapist?" No matter how modern the equipment, the radiation therapy must be properly applied and decisions made as to whether the patient can be cured by this means; the optimum tumor dose for each type of tumor; the complications that may arise, and the care of the patient during therapy and many other factors. The utmost cooperation among the various specialties is essential, and all decisions should be made on the basis of what is best for the patient.

It must be fully understood that ionizing radiation is destructive to the cells of the body, whether the cells are normal or abnormal. To deliver a lethal dose to a carcinoma, one must accept certain calculated risks, since the margin of safety between the tumor and the normal surrounding tissue is very small. Surgeons and other specialists must also expect a certain percentage of complications in the successful treatment of their patients. A greater percentage of complications will occur among patients who have been treated with combined forms of therapy and in whom recurrences have taken place. It is desirable to irradiate only the smallest amount of tissue necessary, but it must be remembered that carcinoma cells do not grow in the form of circles, squares, or rectangles, but extend irregularly and without limiting capsules. If the entire lesion is not treated, if the location of the lesion prevents adequate treatment, or if the lesion is radioresistant, recurrences must be expected. The more complicated the technics used, the greater the danger.

Since the cobalt 60 teletherapy unit is becoming more popular and more widely distributed, a brief discussion of the use of this unit will be given. Cobalt 60 is cobalt 59 made radioactive by neutron bombardment in a nuclear reactor. This may take as long as eighteen months. Cobalt 60 decays with a half-life of five and three-tenths years and in its disintegration produces two gamma ray energies of 1.17 and 1.33 Nev. The radiation beam is monochromatic. The depth dose and isodose distributions are approximately the same as those produced by a roentgen machine operating at a peak energy of 3 Mev. To obtain a cobalt 60 source less than 1 inch (2.5 cm.) in diameter requires a specific activity of above 25 curies per gram. Large diameter sources produce too much penumbra. A properly designed collimator must be used to reduce the penumbra effects.

Since 1946 physicists have been studying the possible use of isotopes, which might be much cheaper than radium. The isotope cobalt 60 has been in use since 1951, and it is increasing in popularity.

Cesium 137, which has a half-life of approximately thirty-three years and a gamma energy of 0.66 Mev, is formed as a fission product resulting usually from the splitting of the uranium isotope 235 by neutron bombardment. Cesium is a waste product of all nuclear piles and should be plentiful. The specific activity will be approximately 25 curies per gram. Cesium 137 should be cheaper than cobalt 60, but the source size will be larger than cobalt 60 and the penumbra larger. Much less shielding will be required for cesium 137.[5] It is doubtful whether Cesium 137 telecurie units will replace roentgen therapy units.

The linear accelerator, the betatron and other megavoltage units will have limited distribution because of the high initial cost, the large amount of shielding needed, the greater space requirements and, for the present, lack of scientific proof of its measurably increased superiority over therapy units up to 3 Mev.

Cobalt 60 therapy has been in clinical use since 1951 in Canada and since 1952 in this country. At present, irradiation is employed, when indicated, for carcinoma of the head and neck, bladder, lung, esophagus, ovary, breast, cervix and uterus in the form of cobalt 60 therapy. Whenever possible, the primary lesion in cases of carcinoma of the cervix is treated by radium. For many carcinomas located as aforementioned it is given postoperatively. Carcinoma of the skin is treated by radium, superficial or high voltage therapy if no operation has been performed. Malignant lymphomas are most often treated with conventional roentgen therapy. The various types of therapeutic equipment should be available, in order that the proper type can be used for the individual case.

From March 1955 to March 1958, in the following cases, carcinoma has been treated by means of cobalt 60:

Location of Carcinoma	*Number of Cases*
Uterine cervix	114
Endometrium	25
Bladder	64
Esophagus	20
Ovary	62
Lung	225

Watson[4] listed cases of malignant tumor treated by radiotherapy at the Saskatoon

Cancer Clinic from 1952 to 1956. The following methods were employed:

Method	*Patients Treated, %*
CO^{60}	32
Betatron	4
400 KV.	1
200-280 Kv.	19
140 Kv.	21
Radium, etc.	23

The therapeutic advantages of cobalt 60, and of all supervoltage and megavoltage units, are as follows:

1. There is an increased depth dose.
2. The volume of irradiated tissue is less, owing to a decrease in lateral scatter, *with a more sharply defined beam.*
3. The maximum point of ionization in the tissue for cobalt 60 is approximately 6 mm. below the skin (deeper for the higher megavoltages). This produces much less cutaneous effect. Daily doses of 300 r to the skin of cobalt 60 up to 4,000 r will produce little cutaneous change. Skin doses of 6,000 r in four weeks have not produced moist desquamation of the skin.
4. There is little need for rotational therapy. Fixed field therapy is usually adequate.
5. There is usually a decrease in radiation sickness, probably because of the smaller volume of tissue irradiated.
6. There is decreased absorption of the radiation by bone as compared to soft tissue. This is a definite advantage in the irradiation of carcinoma of the head and neck.
7. Increased tumor doses can be given in less time than with conventional therapy.
8. The irradiation is better tolerated by most patients than is the conventional type.
9. Patients can tolerate tumor doses of from 1,000 to 1,500 r per week for total tumor doses of 5,000 r to the pelvis and tumor doses of 6,500 to 9,000 r to the region of the oral cavity.

The advantages listed for cobalt 60 and with the higher voltage units have been observed by many radiotherapists, as well as in my own experience of three and one-half years with cobalt 60 therapy.

From a purely clinical standpoint, on the basis of close observation of the effects of cobalt 60 therapy on the mucosa and of its effect on tumors, it is my opinion that one must give from 15 to 25 per cent more cobalt 60 therapy than conventional radiation therapy to produce the same end result. Even if one did not improve the five-year results over those of conventional therapy, however, the value of supervoltage and megavoltage therapy for deep-seated carcinoma has been proved, because patients tolerate this therapy so well; the ease of administration, the sparing of the skin and the increased depth dose. Sufficient information has accumulated to indicate that the five-year successful results will at least equal those of conventional roentgen therapy.

Brief comment only will be made on the use of supervoltage therapy for carcinomas of certain parts of the body.

Carcinoma of the Head and Neck.—Carcinoma of the head and neck and malignant tumor of the brain are best treated by means of the higher energy beam and for the reasons aforementioned. Occasionally it has been found desirable to give one-half to two-thirds of the tumor dose with cobalt 60 in certain cases of carcinoma of the head and neck, follow with radium needles or radon seeds for the remainder of the dose. Bone, cartilage and skin reactions have been at a minimum. A tumor dose of approximately 6,000 r to 8,500 r, delivered in four to six weeks, is given.

Carcinoma of the Breast.—Cobalt 60 therapy is used postoperatively after simple or radical mastectomy for mammary carcinoma. The mediastinal, axillary, supraclavicular and infraclavicular regions are treated by means of anterior and posterior opposing fields. A tumor dose of approximately 5,000 r is given.

Since in more than 10 per cent of carcinomas of the breast the internal mammary lymph nodes are involved, without other evidence of metastasis, and in approximately 35 per cent of the cases in which the axillary lymph nodes are involved the internal mammary lymph nodes contain metastatic disease, routine postoperative irradiation is certainly in order. Probably for the majority of patients with carcinoma of the breast the routine radical mastectomy will be inadequate, because of the involvement of either internal mammary or supraclavicular lymph nodes, or both.[5]

Carcinoma of the Cervix.—The usual procedure in the treatment of cervical carcinoma is to use both radium and roentgen rays. The cervix, the uterus and the upper third of the vagina can tolerate a large amount of radiation. Radium is considered preferable for treatment of the primary lesion; roentgen therapy is necessary to increase the tumor dose in the lateral pelvic areas.

Approximately 6,500 to 7,000 gamma roentgens are given to point A, which is estimated to be 2 cm. above the cervical os and 2 cm. lateral to the midline of the uterus. Point B is 3 cm. lateral to point A. About one-third of the tumor dose given to point A will reach point B; therefore, it is necessary to supplement the dose at point B by a tumor dose of 2,500 to 3,000 r from external irradiation. Cobalt 60 therapy has been used entirely for this. No additional radiation is given to point A. The total tumor dose at point B will be be about 5,000 r.

If the carcinoma recurs and at least six months has elapsed since the previous therapy, the entire pelvis is irradiated by means of cobalt 60 and a midpelvic dose between 4,000 r and 5,000 r is given. I have done this many times for recurrent carcinoma after one or more years had elapsed since conventional roentgen therapy was given. Some of the preliminary results have been highly satisfactory, and no unusual complications have occurred.

There has been a gradual decrease in the mortality rate associated with cervical carcinoma. This may be accounted for by a decrease in the incidence of the disease and by improved therapy. The five-year survival rates for carcinoma in selected sites, as reported from the Connecticut State Department of Health, are as follows:

	Cervix Uteri, %	*Corpus Uteri,* %
1935-1940	35	48
1941-1946	43	59
1947-1951	53	62

These figures are, in general, representative of those recorded for the uterus from 1935 to 1951.[6]

Carcinoma of the Corpus Uteri.—Carcinoma of the uterine corpus is generally treated by preoperative irradiation, followed by hysterectomy and bilateral salpingo-oophorectomy in six weeks. The preoperative irradiation is probably of the greatest value when the uterus is large and the malignancy of the tumor is high.[7] It is difficult to prove the value of irradiation for a patient with a small uterus and a tumor of low malignancy. If extension has occurred beyond the uterus, cobalt 60 therapy is given.

Carcinoma of the Ovary.—Ovarian malignant tumors are best treated by surgical intervention. Unfortunately, in many patients the disease is no longer localized and cannot be completely removed.

Irradiation therapy with cobalt 60 is given to all patients when the growth cannot be removed in its entirety. Although the results are generally poor in patients with extensive disease, surprisingly good palliative results are obtained at times, and no one can determine in advance which tumors will respond and which will not. The patients may be reoperated on after irradiation, with additional palliation for many months.

Taylor[8] has reviewed some of the surgical statistics on five-year cures of ovarian carcinoma, noting that many estimates vary from 20.6 to 30 per cent between 1949 and 1955. Some patients with localized low-grade tumors, however, will have a very good chance to survive many years after the operation. Elkins[9] noted from reports in the literature that the percentile five-year survival figures, when both operation and radiation therapy were used, varied from 22.5 to 53.

For extensive lesions I treat the pelvis and abdomen, including the para-aortic lymph nodes, and give a tumor dose of approximately 4,000 r, using cobalt 60.

Holme,[10] reporting the results in 207 cases of malignant ovarian tumor treated by operation only, stated that 23 per cent of the patients survived; in 145 cases in which operation and radiation therapy were combined, 39 per cent, and in 15 cases treated by radiation therapy only, 20 per cent.

Carcinoma of the Lung.—Since February 1955, 225 patients with carcinoma of the lung have been treated with cobalt 60 therapy. All have been examined by thoracic surgeons, and many have had lobectomy and pneumonectomy in an attempt to eradicate the disease.

In 1938 I reported on a series of patients with pulmonary carcinoma who were inoperable and were given moderate tumor doses of conventional roentgen therapy. There was an increase in the survival period and the patients were clinically improved; less coughing, fever and chills, and there was an increase in strength.[11]

Tumor doses of 5,000 to 7,000 r are being given to the current series of patients who have disease localized to the chest, with cobalt 60 therapy, in an effort to see whether the cure rate can be increased and palliation improved. Some of the responses have been very good. One cannot predict which patient will and which will not respond. Several have been for two years in good condition and symptom free. Definite palliation has been produced in the majority.

Carcinoma of the Bladder.—Carcinoma of the urinary bladder has been treated with cobalt 60 therapy with tumor doses between 5,000 and 6,000 r in four to six weeks. The results were much better than was anticipated. The discomfort to the patient is minimal, and fibrosis and contracture of the bladder have occurred infrequently up to the time of writing.

Complications of Cobalt 60 Therapy.—The complications associated with cobalt 60 therapy during these three years of experience have been minimal, and so far I have not encountered fibrosis of the subcutaneous tissues. In the tumor dose range given, no perforations have occurred from the gastrointestinal tract. The pharyngitis, esophagitis, colitis and cystitis that have occurred when treatments were directed to those areas have been mild and have responded readily to medication.

ZUSAMMENFASSUNG

Es ist durchaus möglich, dass die Behandlung des Krebses mit Röntgenbestrahlungen von hohen und äusserst hohen Spannungen nicht zu einer Erhöhung der fünfjährigen Überlebensquote führt. Der Wert dieser Form der Behandlung liegt in der Möglichkeit, grössere Tiefendosen zu verabfolgen, geringere Haut- und

Knochenreaktionen auszulösen, den Röntgenkater herabzusetzen und dem leidenden Kranken die Behandlung erträglicher zu machen.

Die Bestrahlungen müssen sorgfältig geplant und mit Genauigkeit ausgeführt werden. Dies kann zu einer Verbesserung der Endergebnisse beitragen.

In der vorliegenden Arbeit werden keine Angaben über die Behandlungsresultate gemacht, weil erst drei Jahre seit ihrer Durchführung verstrichen sind.

Es ist sehr leicht möglich, dass bei der Strahlenbehandlung mit radioaktivem Kobalt 15 bis 25 Prozent höhere Dosen als bei Anwendung der konventionellen Bestrahlungstechnik gegeben werden müssen, um den gleichen biologischen Effekt zu erzielen. Der Verfasser hat es für notwendig befunden, besonders bei Krebsen des Kopfes und des Halses die Tumordosis zu erhöhen.

RÉSUMÉ

Il est fort possible, pour ce qui est du carcinome, que la thérapeutique de surdosage (ou de mégavoltage) n'ait pas pour conséquence une augmentation substantielle du taux de survie de 5 ans. Mais la valeur de ce traitement réside dans le fait qu'il permet l'administration de doses plus pénétrantes avec une meilleure tolérance (diminution des réactions générales, cutanées et osseuses).

La thérapeutique doit être bien étudiée au préalable et appliquée avec une grande précision en vue d'améliorer ses effects. L'auteur ne la pratiquant que depuis trois ans juge prématuré d'exposer ici ses résultats. Il a jugé utile d'augmenter les doses habituelles en particulier pour les carcinomes de la tête et du cou (doses de cobalt de 60 r 15 à 25% plus élevées que celles de la roentgenthérapie classique pour le même effet biologique).

RESUMEN

La radioterapia con supervoltaje y megavoltaje no parece mejorar sensiblemente la supervivencia del cancer por encima de los 5 años. El valor de esta forma de terapia está en que se alcanzan dosis mayores en profundidad mientras que los efectos de la radiación de la piel, tejdo óseo y en el organismo en general son mucho menores; además el enfermo débil soporta muy bien el tratamiento.

Para obtener buenos resultados hay que planear con precisión la pauta del tratamiento y de las sesiones. El artículo no publica resultados pues sólo han pasado 3 años desde la puesta en práctica de esta técnica.

La terapia con cobalto radiactivo (Co 60) requiere seguramente dosis entre un 15 y un 25% más altas que las usadas en la radioterapia corriente. El autor cree que debe aumentarse la dósis tumor, sobre todo cuando se trata de carcinomas de cabeza o cuello.

SUMARIO

Acha que, não houve substancial aumento na taxa de sobrevida de cinco anos como resultado da terapeutica de super e maga-voltagem no carcinoma. O valor dêsse tratamento está no dose de maior profundidade, menor reação cutânea e ossea, menor disturbio pós-irradiação alem de que o paciente poderá tolerar o tratamento com mais conforto. A melhoria dos resultados pode ser obtida com um bom planejamento da terapeutica pela irradiação. Nesta comunicação o A. não fornece resultados, porque decorreram apenas 3 anos. É possivel que dosagens convencionais 15 a 25% mais fortes são necessarias para obter os mesmos efeitos biologicos do cobalto 60.O A. acha que é necessario aumentar a dose tumor particularmente para os carcinomas da cabeça e do pescoço.

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Mark Twain once remarked that clues in a murder case were all right, but you can't hang clues. Perhaps we might paraphrase this by saying that you can't treat diagnoses. No, but just as clues lead to capture. so diagnoses indicate diseases. and the physician cannot treat a disease intelligently until he recognizes it.

So. when a patient consults his physician. the physician employs his five senses. Some physicians. like Dr. Bell. who was the original of Sherlock Holmes. have trained their powers of observation to such an extent that their shrewd deductions seem uncanny. But even the average physician has been so trained that it becomes second nature to notice the pupils of the eyes and the colour of the skin, to note how patients walk and whether they puff on exercising.

A few years ago a physician was a member of a delegation which called upon a prominent public official who had the reputation of being a brilliant and successful executive. After the interview the various members of the delegation were praising him and describing him as "brilliant," "driving." "full of imagination," and a "genius." The physician was then asked his opinion. "What struck me first." he answered. "was that the man's right pupil was about three times as large as the left. and that when he faced the light. neither pupil contracted. That man is not a genius, he's simply losing his mind." And he was. Two months later he was admitted to a hospital for the insane.

—*Major*

Secondary Excision of War Wounds

COL. VISHWANATH P. GUPTA, M.S., F.R.C.S. (Eng.), F.I.C.S.*

APO 56, INDIA

DURING the second World War I had to deal with a considerable number of battle casualties amidst prisoners of war of four nationalities, namely, Eritreans, Abyssinians, Italians and Germans, while the battles raged in the Middle East theatre and later extended across the Mediterranean to Sicily and Italy. These prisoners were, naturally, picked up late from the battlefields and then evacuated to the advance hospital where I worked as a surgical specialist. Whereas our own casualties could be collected early and brought to surgical teams within twenty-four hours of their being wounded, so that primary excision of the wounds was possible, the same was not true of prisoners of war, who as a rule were collected late, after the day's fighting was over and the enemy had receded, leaving behind its wounded in the field.

Primary excision of war wounds is an accepted principle and has gone a long way toward reducing the mortality rate and saving limbs, but it must be carried out before the wound becomes infected; that is, twenty-four hours, at latest, after infliction of the wounds. Attempts to excise the wound after twenty-four hours resulted in spread of infection and general septicemia. The consensus, therefore, was that it should be given up and done as a substitute debridement. Debridement simply implies enlargement of the wound in order to effect free drainage, combined with rapid removal of foreign bodies and obviously dead tissue.

Faced with the problem of a large number of war wounds that had passed the period suitable for primary excision, I developed the technic of "secondary excision," by which the wounds could be successfully excised without spread of infection or septicemia and giving the patient benefits equivalent to those of primary excision.

Definition of Secondary Excision.—Secondary excision is excision of a wound that is infected, as against primary excision, which is excision of a wound before infection sets in. Thus, secondary excision applies to wounds more than twenty-four hours old.

Rationale of Secondary Excision.—The object of secondary excision is to remove all dead tissue from a wound. The bulk of dead tissue consists of muscle, which is destroyed by the explosive effect of a bullet at the exit wound or by pieces of bombs, shrapnel, etc. These wounds are wide and gaping and contain a considerable amount of dead muscle tissue. The muscle tissue that is still alive is limp and inactive. Infection of these wounds soon occurs because of indriven foreign bodies and pieces of clothing, and the bacteria multiply vigorously in the dead muscle, which forms an ideal medium, providing multitudes of dead spaces and crevices, the more because of the inactive condition even of the living muscles. These wounds, if treated by simple drainage and dressing, take a long time to heal and then do so with the formation of large adherent scars and keloid tissue. If bones are broken as well, the healing is delayed even further because of chronic osteomyelitis, which in some cases may cause a

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*Assistant Director of Medical Services, Headquarters of the 5th Infantry Division.

Submitted for publication Aug. 19, 1958.

discharge of pus on the surface for an indefinite time.

When secondary excision is performed the wounds heal rapidly, with soft pliable scars, and no keloid forms. In a compound fracture the bones unite without the risk of osteomyelitis. Lastly, gas gangrene, tetanus and secondary hemorrhage, which are dreaded complications of infected wounds, are done away with by secondary excision, and the surgeon need worry no further.

Cause of Failure of Secondary Excision.—In spite of the great advantages offered by secondary excision, surgeons met with disaster when they attempted it in the past. I assign two main causes to this failure: first, lack of preparation of the wound prior to secondary excision and, second, errors in technic.

I should like to emphasize the fact that the preliminary treatment of these infected wounds is essential, in order to eliminate the activity of such virulent bacteria as Streptococcus haemolyticus. There should be no hurry in performing secondary excision; one should wait until it is ascertained that *acute infection of the wound* has subsided. The general condition of the patient and the local condition of the wound can, generally speaking, be relied upon to indicate whether or not the infection is quiescent. If there is doubt, a bacteriologic examination of the wound can be made by swab and culture.

With regard to the technic of excision, *another precaution: It is definitely incorrect* to cut through dead and infected tissue, for it leads to absorption of toxins and bacteria into blood, and septicemia

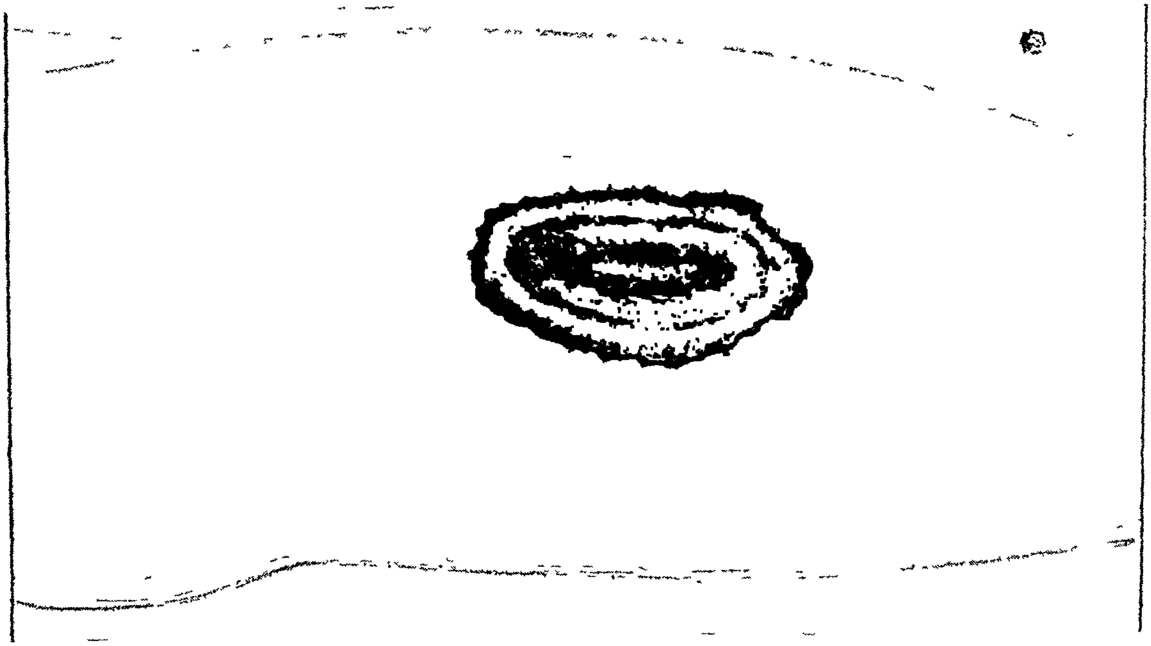

Fig. 1.—Explosive effect on exit wound caused by rifle bullet. Wound, more than twenty-four hours old, has passed stage for primary excision. Extensive damage of muscles with infection supervening, if treated by debridement or conservatively, has inherent dangers of gas-gangrene, tetanus and secondary hemorrhage in the early stages; and, later would go on to protracted healing with formation of large adherent scar and keloid. The inset shows the wound of entry, on the inner aspect of thigh.

may result. At the same time, local spread of infection may occur.

The aim of secondary excision is to cut through healthy tissue, thereby removing the dead tissue together with a margin of healthy tissue. For this purpose the dead tissues need to be demarcated from the healthy parts. This is accomplished by my technic for this procedure.

It may be noted that, whereas in fresh wounds all the layers, from the skin to the very depths, are distinct and separate, the same is not true of old wounds, in which all the layers are matted together. Pathologic study of the wound would clarify this point even further. The wall of an old wound has the edge of the skin, the superficial and deep fascia and the superficial and deep muscles all bound into one mass. The inner layer of this mass contains infected, dead and devitalized tissue that slowly liquefies into slough and pus and is discharged into the wound. The lateral layer of the mass abuts on the healthy tissues of the body, and a line of demarcation, with mild sepsis, forms where the dead tissue is undergoing the process of absorption, separation and fibrous tissue formation. Further, the edge of the skin is the portion of least destruction, but in the depth of the wound the thickness of the dead muscle mass may be considerable. The excision of a late wound thus requires a fine technical skill and much patience, as otherwise disaster may result.

Technic.—The three steps of secondary excision by my method are (1) preparation of the wound; (2) excision of the wound, and (3) aftertreatment.

Preparation of the Wound: As a rule, I have treated these wounds by Carrel-Dakin's irrigation, carried on for forty-eight hours. The part was kept elevated and resuscitation measures instituted to improve the general condition of the patient. A course of chemotherapy was invariably given. Antibiotics were not available at that time but should be used liberally in the future. Carrel-Dakin's irrigation proved excellent in reducing the infection, and in the majority of cases just forty-eight hours of treatment sufficed; if not, it was continued for a few more days. By this means all the spaces and crevices of the wound could be drained, which cannot be done so well by any other method. As an alternative, however, and for minor wounds, washing with hydrogen peroxide, hot foments and frequent antiseptic dressings gave good results.

War wounds that are brought for treatment twenty-four hours after their infliction have passed the period for primary excision. They should be treated by "secondary excision" as here described.

The main steps are as follows:

1. Preparation of the wound by Carrel-Dakin's irrigation.

2. Excision as described, with preservation of the skin to the maximum extent possible and liberal excision of muscle through healthy parts.

3. Mobilization of the skin by undercutting and suture over the wound, either partially or completely. Apart from the skin, the muscles and fascia in the depths of the wound are not opposed, and no buried sutures are left except the small knots that tie the bleeding vessels.

After excision of the wound, in a case of compound fracture, the skin is sutured at either end only, the central portion being left open to drain the fracture site. The fracture is treated either by skeletal traction (femur) or immobilization in plaster of paris.

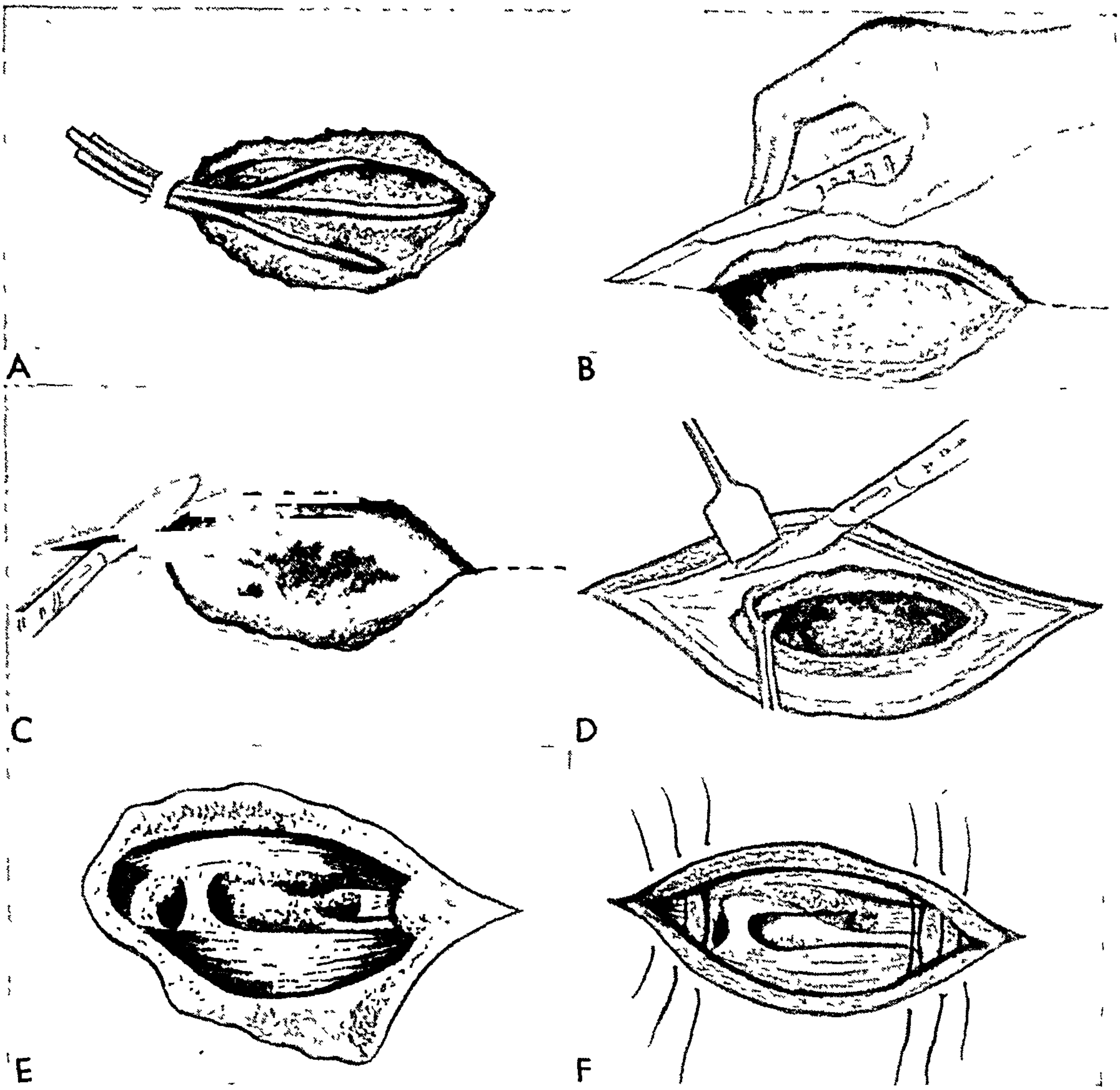

Fig. 2.—*A*, preparation of infected wound for secondary excision; Carrel-Dakin irrigation. *B*, first step of secondary excision by author's technic: Skin is incised at either end of wound to expose healthy subcutaneous tissue in order to provide bearing for next step. *C*, second step: Blade of knife is inserted in subcutaneous tissue and advanced toward edge of wound to detach skin all round without sacrificing any part of it. *D*, third step: Dead tissues are excised by cutting through healthy muscles. Nonobservance of this precaution may lead to septicemia or local spread of infection. *E*, fourth step: Dead tissues have been excised all round and down to depth of wound. Note healthy appearance of muscles. *F*, fifth step: Partial closure of the wound at either end. Note that no buried sutures are left since no fascia or muscle are approximated.

Excision of the Wound: Excision of the wound is undertaken with all aseptic precautions. The surrounding skin is painted with iodine, and sterile towels are placed all round. The actual wound is touched with pure carbolic acid, followed by spirit, and then wiped clean with dry gauze. The skin is incised at either end of the wound in its long axis till healthy subcutaneous tissue is exposed. The blade of the knife is then inserted into the subcutaneous tissue and advanced toward the edge of the wound. Working the blade outward toward the edge of the wound, enables one to detach the skin easily from the wound all round, without sacrificing any portion of it. After detachment of the skin the wound margin will feel hard over an area corresponding to that part of it which is composed of dead tissue, which lateral to it the feel of healthy tissue will be evident. The excision of the dead tissue is begun by cutting through the healthy tissues all round and, as far as possible, continuously, in order to cut out the wound track. In a deep wound it is better to excise the superficial layers first and then expose the deeper layers of the dead mass by retracting the superficial muscle layer. In case bone is fractured as well, only the loose pieces are removed. Any embedded foreign bodies, or bits of indriven clothing or old blood clots are removed.

The excision of the affected muscles is done liberally, for, apart from removing all traces of infection, which dwells particularly in muscles, it reduces the size of the wound and makes it possible to close the skin without tension. Liberal removal of muscles in their long axis causes little disability, as the loss is soon compensated, but muscles must not be cut transversely. The deep fascia and the fascia coverings of muscles are all incised in their longitudinal axis, as a rule. It need hardly be added that sound anatomic knowledge is essential in avoiding damage to important vessels and nerves during incision. While excision is being done, the healthy muscles bleed freely, but each bleeding point should be ligated. The edge of the skin is only trimmed, for undue sacrifice of it is unwarranted. Finally, the excised wound is cleaned with hydrogen peroxide and then irrigated with acreflavine solution (1 : 1,000). The wound is now ready for the next step, for which gloves are changed, fresh towels applied and fresh instruments used.

The next step is closure of the skin. In my experience, partial closure of the skin at either end of the wound must always be done. For this purpose the skin should be loosened by undercutting. Complete closure of the skin may be carried out in flesh wounds only, and only if, after the excision, the wound looks very clean. With complete closure of the skin, drainage tubes must be inserted at either end and the patient kept under strict observation for spread of infection; should this occur, the stitches should be cut out without delay. In those cases in which the incision has not been satisfactory it is advisable to pack the wound and leave it completely open, with secondary suture after a few days. In cases of compound fracture the central portion of the wound is always left open for drainage.

Partial closure of the wound at either end, after excision, offers great advantages. It reduces the size of the wound, obliterates potential spaces where oozing blood may collect and form a nidus for multiplication of bacteria, and it also controls hemorrhage. Furthermore, muscles deprived of the warmth and protection of their cutaneous covering tend to become edematous, infected and necrotic and thus would vitiate the result of the operation should the skin not be sutured at least partially.

It should be noted that approximation of muscles and fascia by suture is not permitted, for fear of leaving buried sutures that would cause infection.

Aftertreatment.—The aftertreatment of flesh wounds is simple, for they heal rapidly. When there has been much loss of skin, skin grafting should be done as soon as the wound is ready for it.

The aftertreatment of compound fractures is as follows:

1. *Plaster immobilization.* After excision, the skin is closed at either end of the wound, while in the central portion

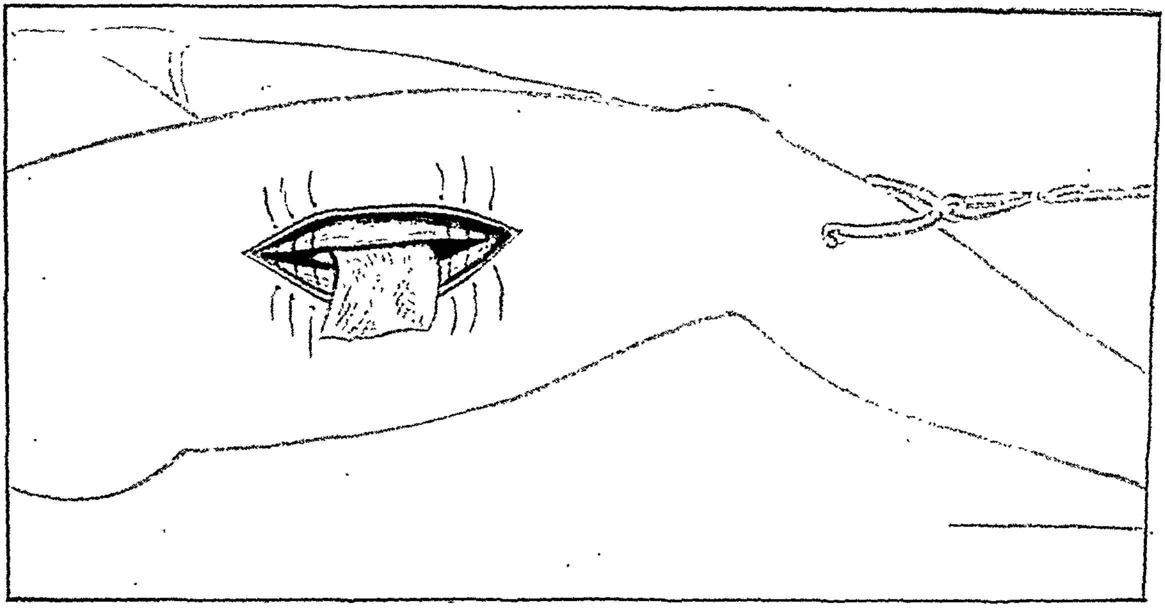

Fig. 3.—Sixth step: In compound femoral fracture the wound is only partially closed at either end by approximation of skin; petrolatum gauze plug is inserted to drain fracture site. Fracture is treated by skeletal traction on a Braun splint. This facilitates daily dressings of wound, which heals in four to six weeks while fracture becomes progressively consolidated.

petrolatum gauze is plugged in for drainage of the fracture site. Petrolatum gauze is wrapped liberally around the limb over the wound and for a certain distance above and below it. Plaster of paris is then applied to immobilize the fracture, after it has been ascertained that the fragments are in apposition. The plaster cast is renewed after about three weeks, when the skin sutures are removed. Renewal of the plaster cast is continued until bony union is complete. The wound has been observed to heal in six weeks.

With compound fracture of the forearm *some patients find it difficult to withstand* the smell of closed plaster treatment, especially in tropical climate. Since frequent changes of plaster may disturb the alignment of the fragments, the method I *adopted was to open a window in the plaster* at the site of the wound and dress the wound daily. The petrolatum gauze wrapped liberally round the wound and above and below it served to prevent the development of edema in the wound after a window had been opened in the plaster.

2. *Skeletal traction.* For fracture of femur plaster immobilization was not employed because, first, it was difficult to keep the fragments opposed, and second, the discharge from the wound soon soaked the plaster in the initial stages, when it was inadvisable to change the plaster for fear of disturbing the alignment of the fragments. Fractures of the femur were, therefore, invariably treated by Steinmann's pin traction applied through the tubercle of the tibia.

Compound factures of the femur were evacuated from the front lines on Thomas' splint, which was kept in position by what is known as Tobruk Plaster. In such a case Carrel-Dakin's irrigation was used while the patient was still on Thomas' splint. Later, secondary excision of the wound was performed after the passage of a Steinmann pin through the tibia, to which a stirrup with a piece of rope was attached for pulling by an assistant, in order to keep the fragments steady and prevent laceration of blood vessels during excision of the wound. After secondary excision and partial closure of the skin at either end, the central portion of the wound was plugged with petrolatum gauze for drainage, and then the fracture was treated by skeletal traction on a Braun splint. The wound was dressed daily. Healing took place in about six weeks. The fracture showed good union in ten weeks. Skeletal traction was maintained for six weeks, with smaller amounts of weight in the later stages, and was replaced by skin traction after six weeks. After three to four weeks of skeletal traction, however, plaster of paris could be applied if the patient was required to be evacuated down the line to a base hospital.

Results.—Flesh Wounds: In 1941 I performed a series of 50 secondary excisions with complete suture of the skin, the time being ten to twenty days after infliction of the wound. In 70 per cent healing occurred by primary intention. In the remaining 30 per cent the stitches gave way because of tension and the wound burst to a distance of ½ inch to 1½ inches (1.2 to 3.7 cm.). The burst wound, however, healed rapidly, and the results obtained showed that the labor was well spent; a thin and pliable scar resulted in each case, without the risk of keloid formation or disfigurement due to big adherent scars. Wounds as large as 7 by 2½ to 3 inches (17.5 by 6.2 to 7.5 cm.) were successfully sutured. In 1943, in another theater of war, 30 cases were dealt with in the same way and similar results obtained. Apart from these, in a fair number of cases local gas gangrene infection had developed; these wounds were excised immediately as an emergency operation, and then delayed suture of the skin was performed. There was also a considerable number of large irregular wounds in which, after excision, the skin was opposed in parts and patches. In these the uncovered parts of wounds filled up by granulation and required skin grafting. I performed secondary excision and suture up to twenty-eight days after infliction of the wound, after which it was considered unnecessary.

By way of experiment, a few blown-off wounds were excised and left open in their whole extent, packed with petrolatum gauze and encased in plaster of paris. These wounds remained clean but healed very slowly and needed skin grafting.

Simple perforating wounds caused by a long range bullet with a small entrance and a small exit wound were not excised, as they tended to heal spontaneously, but otherwise all wounds with a large exit or a large entrance and exit wounds or blown-off wounds were subjected to excision.

Compound Fractures: In these cases, secondary excision of the wound with partial suture of the skin at either end produced miraculous results, for the wounds healed in four to six weeks, while the fracture was immobilized in plaster or treated by skeletal traction. The fracture united normally, and the convalescence was not prolonged. In cases in which excision was not performed, chronic osteomyelitis and an infected wound tract showed discharging sinuses for a year or more.

CONCLUSIONS

After evaluating the results of secondary excision, I have concluded that "where there is dead tissue, cut it out" should be considered as good an aphorism as "where there is pus, let it out."

Secondary excision of war wounds will have wide applicability in nuclear warfare, when mass casualties will be produced and primary excision will not be possible for most of them. With my technic, secondary excision can be carried out with safety, thus preventing the formation of keloids and large adherent scars and also the formation of indefinitely discharging sinuses. Finally, convalescence will be considerably shortened.

RÉSUMÉ

Les plaies de guerre traitées 24 heures après et ayant de ce fait dépassé le stade l'excision primaire, devraient être soignées par "excision secondaire," selon la méthode de l'auteur.

L' "excision secondaire" comprend les principaux temps suivants:

1. Préparation de la plaie par irrigation au liquide de Carrel-Dakin.
2. Excision de la plaie selon la technique de l'auteur, qui comporte le ménagement au maximum de la peau alors que les muscles sont largement excisés à travers les parties saines.
3. Incision et mobilisation de la peau et suture partielle ou complète pardessus la plaie. Les muscles et le fascia du fond de la plaie ne sont pas rapprochés, et il ne reste aucune suture enfouie à part les petits noeuds ligaturant les vaisseaux sanguins.

Dans les cas de fractures compliquées et après excision de la plaie, la peau est suturée à une extrémité seulement, alors que la partie centrale est laissée ouverte pour permettre le drainage au niveau de la fracture. La fracture est traitée soit par traction osseuse comme pour le fémur, soit par immobilisation plâtrée.

RESUMEN

Las heridas de guerra cuyo tratamiento haya de comenzarse después de veinticuatro horas, cuando ha pasado ya el periodo de "excisión primaria," deben ser tratadas por "excisión secundaria" en la forma propuesta por el autor.

Los puntos fundamentales de la "excisión secundaria" son:

1. Preparación de la herida por irrigación con líquido Carrel-Dakin.
2. Excisión de la herida en la siguiente forma: conservación máxima de la piel excindiendo en cambio ampliamente hastatejido sano las partes blandaes subyàcentes.
3. *Movilización amplia de la piel por* despegamiento subcutáneo suturándola después sobre la herida. Por el contrario los músculos y fascias no son suturados con lo que no se deja ningún punto enterrado salvo los indispensables de las ligaduras vasculares.

En los casos de fractura compleja una vez excindida la herida se sutura la piel dejando un pequeño hueco para un tubo de drenaje. Después se inmoviliza la fractura con extensión o vendaje enyesado.

ZUSAMMENFASSUNG

Kriegswunden, die erst 24 Stunden nach erfolgter Verletzung zur Behandlung gebracht werden und dadurch den Zeitpunkt für eine primäre Exzision versäumt haben, sollten nach dem vom Verfasser angegebenen Verfahren der "sekundären Exzision" behandelt werden.

Die wesentlichen auszuführenden Schritte bei diesem Verfahren sind die folgenden:

1. Vorbereitung der Wunde mit Carrel-Dakinscher Ausspülung.
2. Ausschneidung der Wunde nach dem vom Verfasser angegebenen Verfahren, wobei soviel Haut wie nur irgend möglich gerettet wird, während die Muskeln durch die gesunden Teile hindurch grosszügig ausgeschnitten werden.
3. Mobilisierung der Haut, die durch Unterschneidung losgelöst und entweder über einen Teil oder über die gesamte Ausdehnung der Wunde zusammengenäht wird. Die Muskeln und Faszien in der Tiefe der Wunde

werden nicht zusammengebracht, und ausser den kleinen die blutenden Gefässe verschliessenden Knoten werden keine Nähte in der Tiefe zurückgelassen.

Bei komplizierten Brüchen wird die Haut nach Herausschneidung der Wunde nur an den beiden Enden genäht, während der mittlere Abschnitt zur Drainierung der Frakturstelle offen gelassen wird. Der Bruch wird entweder wie im Falle einer Oberschenkelfraktur durch Knochenzug oder durch Ruhigstellung im Gipsverband behandelt.

SUMARIO

O A. declara que as feridas de guerra que chegam para tratamento depois de 24 horas devem ser tratadas por excisão secundaria. Descreve os seguintes tempos da excisão secundaria:

1. Preparação da ferida por irrigação Carrel-Dakin.
2. Ex cisão cutanea economica porem estirpação muscular em area limite das partes sãs, conforme esquema do A.
3. Mobilização da pele por descolamento com sutura total ou parcial. Não sutura muculos nem fascia e não usa suturas na profundidade esceto para ligaduras.

Nas fraturas expostas depois da escisão da ferida sutura a pele somente nas extremidades, deixando o centro aberto para drenagem. A fratura é tratada por tração esquelética como no caso do femur ou por imobilização gessada.

> . . . A scientist must learn that it is not enough to make a great discovery. He must teach mankind to apply it to their own betterment. And that task is often far more difficult than the actual search for truth.
>
> As a martyr to the world's stupidity, Semmelweis is one of the great tragic figures of all history. As a man and a scientist, his memory is glorious. In his own time innumerable lives were saved because of his discovery, both through his own efforts and those of his students. Had he lived but two decades longer he would have seen his theory fully explained and accepted, his prophylaxis used throughout the world. He might well have fathered antiseptic surgery himself. As it was, he died in the very dawn of a new age of surgery and midwifery, and other men carried to victory the fight which he began.
>
> —*Slaughter*

An Ideal Surgical Correction of Ectopia Vesica

W. G. SHULTZ, M.D., F.A.C.S., F.I.C.S., D.A.B.
TUCSON, ARIZONA

WHILE I was observing one of America's leading urologists as he performed an operation for the correction of this unfortunate congenital defect, it occurred to me that if some means could be devised by which the pubic bones could be brought into approximation, two of this operation's most formidable drawbacks could be disposed of.

The author presents bilateral osteotomy of the os ilium as a part of the surgical correction of ectopia vesica. He points out that there are two important advantages obtainable thereby: (a) that a urethral sphincter can be constructed from the arms of this muscle without separation of either from its attachment to the pelvic bone, thus preventing damage or destruction of the blood or nerve supply of these muscles, and (b) that it results in close approximation of the pubic bones, which permits closure of the abdomen without "sliding" procedures and hence results in a strong abdominal wall. A case is presented, in which the patient was a girl under the age of 3 years and in which the results were excellent.

The possible means are as follows: 1. A urethral sphincter could be constructed from the two arms of this muscle, without separation of either from its attachment to the pubic bone; this would prevent damage to, or destruction of, the blood or nerve supply of these muscles. This, in my opinion, would be a valuable factor in obtaining a functioning vesical sphincter. 2. Close approximation of the pubic bones would permit ready closure of the abdominal defect and easy approximation of the abdominal recti muscles and fasciae, without sliding procedures. This would result in a strong abdominal wall, which is an important aid to initiating and propelling the urinary stream in the act of voiding.

The patient whose case is here presented was one from the local Crippled Children's Clinic, and Dr. John R. Schwartzmann, an orthopedic surgeon, was giving her orthopedic care. When he learned that I was planning to admit her to the hospital for plastic repair of the exstrophic bladder he asked that I notify him after I had completed my operation and she had recovered sufficiently, as he wished to perform a corrective orthopedic procedure on the bony pelvis.

Further discussion elicited the fact that he planned to do a bilateral osteotomy of the os ilium. When asked if the pubic bones could then be closely approximated, he stated that they could. I then suggested that he perform the osteotomy first and that we collaborate in the balance of the

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Read at the Twenty-Third Annual Congress of the United States and Canadian Sections, International College of Surgeons, Los Angeles, March 9-14, 1958.
Submitted for publication June 2, 1958.

operation. This was agreed upon, and the reports which follow will, I believe, substantiate the soundness of my reasoning.

When I lay claim to original thinking in this case, I must admit to a lack of complete knowledge of all the literature on the subject.

The procedure here presented was thought out, planned, and executed in February and March 1955. I must confess that both Dr. Schwartzmann and I were totally unaware of, and that until over two years later (May 1957) I did not learn of, Dr. F. Trendelenburg's classic contribution to this subject.

Dr. Trendelenburg, as is well known, was Professor of Surgery in the University of Leipzig, Germany. On May 30, 1906, he presented a paper entitled "The Treatment of Ectopia Vesicae" before the American Surgical Association. This paper was printed in the August 1906 issue of the *Annals of Surgery*. It presents such sound original thinking and an approach so closely akin to that used in the case here presented, that my presentation will be greatly enhanced by certain pertinent quotations from it.

"The repair of congenital defects of the urethra and bladder constitutes one of the most difficult and for that reason perhaps one of the most interesting chapters in plastic surgery, and if the outcome be successful it may be regarded with intense satisfaction. During the past fifty years many surgeons have occupied themselves with the solution of this problem, and many have been the attempts to devise a method by the aid of which, even in the severe types of the deformity, a restoration of the normal bladder form and normal bladder function could be secured. Up to the present time, however, this ideal has not been reached.

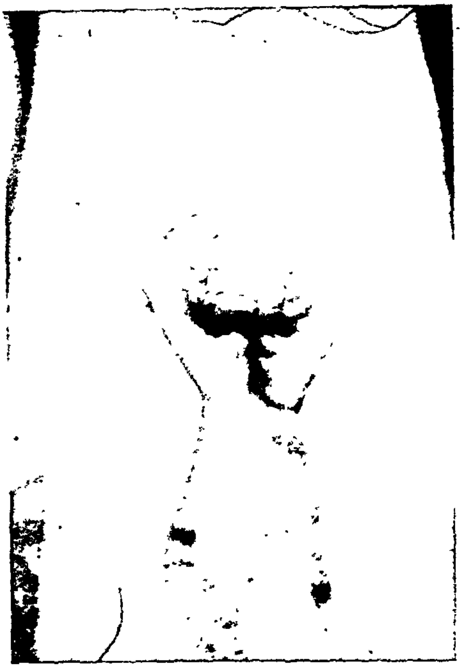

Fig. 1.—Congenital exstrophy of bladder and prolapse of rectum in D.K., aged 2¼ years.

"For more than twenty years I have endeavored to aid the direct union of the freshened edges in cases of ectopia by producing a separation of the pelvic bones at the sacroiliac synchondrosis in order to provide for a closer approximation of the two halves of the pelvis anteriorly at the symphysis and consequently of the edges of the defect. Only a limited number of surgeons have made use of my method, because the bilateral separation of the os ilei from the sacrum was generally regarded as a very dangerous procedure.

"The reason for the failure may be accounted for by the fact that the two sections of the pelvis which have been separated at the sacroiliac synchondrosis have a tendency to gradually resume their former position, therefore the neck of the bladder and the prostatic portions of the urethra which are closely connected with the pubic bones, are pulled upon to such an extent that the muscular ring can no longer be brought into play.

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*Trendelenburg, F.: The Treatment of Ectopia Vesicae, Ann. Surg. 44, August, 1906.

"I have made several attempts to overcome this difficulty by mobilizing the pubic bones with the help of the chisel or by dissecting widely the attachments of the urethra and the neck of the bladder to the latter. In no instance of complete ectopia have I been favored, however, with a permanent result."

He goes on to mention the case of a little girl with pronounced epispadias for which, in his own words, he "did a bloody separation of the pelvic bones at the sacroiliac synchondroses," which permitted complete approximation of the pubic bones, then performed his plastic reconstruction and followed this by wiring the symphysis with silver wire. He then stated: "The wire suture was the cause of the production of a fistulous tract, but the latter closed when the suture, which had already cut its way through the bone, was extracted."

He stated that in this case the result was perfectly satisfactory, and again I quote him verbatim:

"The question naturally arises, why was not a similar effect obtained in cases of complete vesical ectopia? The explanation may be found in the fact that it is impossible in these cases to bring together the pelvic bones in front and to keep them permanently in position. Wiring of the bones particularly in boys cannot be advantageously employed, because the wire comes in conflict with both the bladder and the penis. In younger children, moreover, the wire is very apt to cut its way through the tissues.

"I am of the opinion that it would be wise to go back to the old idea advanced by Demme and Passavant and to make an attempt to bring about the desired changes in the bony structures of the pelvis by orthopedic measures."

For the sake of the record I am attempting to find out what the idea advanced by Demme and Passavant was, but, up to the time of writing, have been unsuccessful. It may be that these surgeons did osteoto-

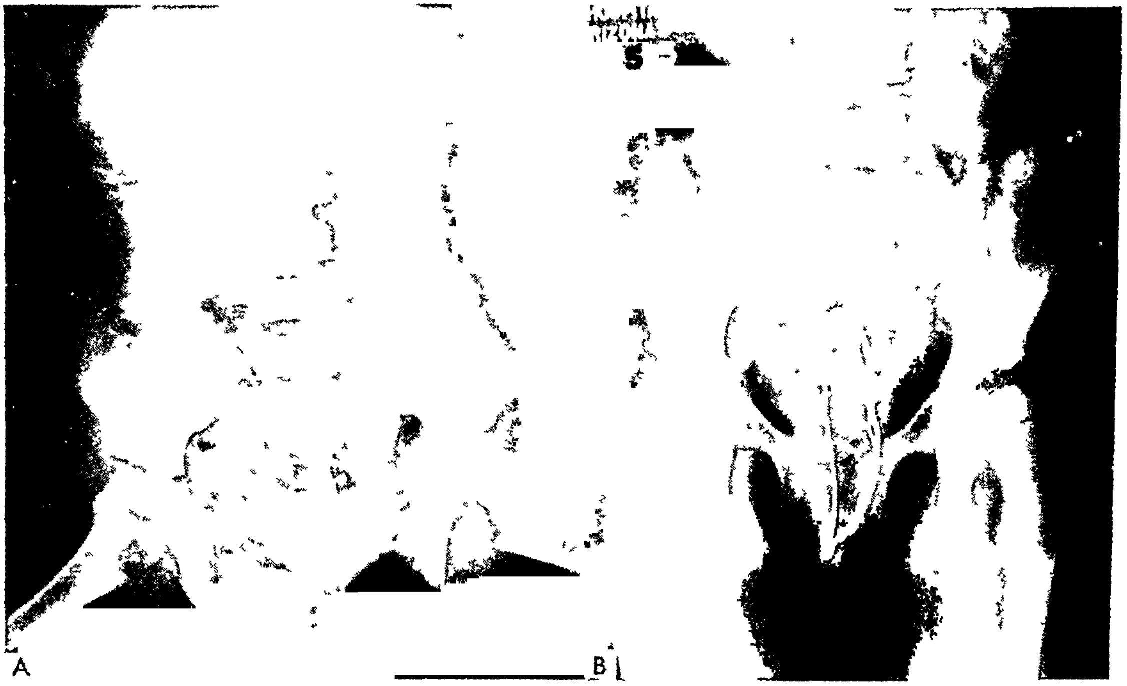

Fig. 2.—Roentgenograms of patient shown in Figure 1 (see text).

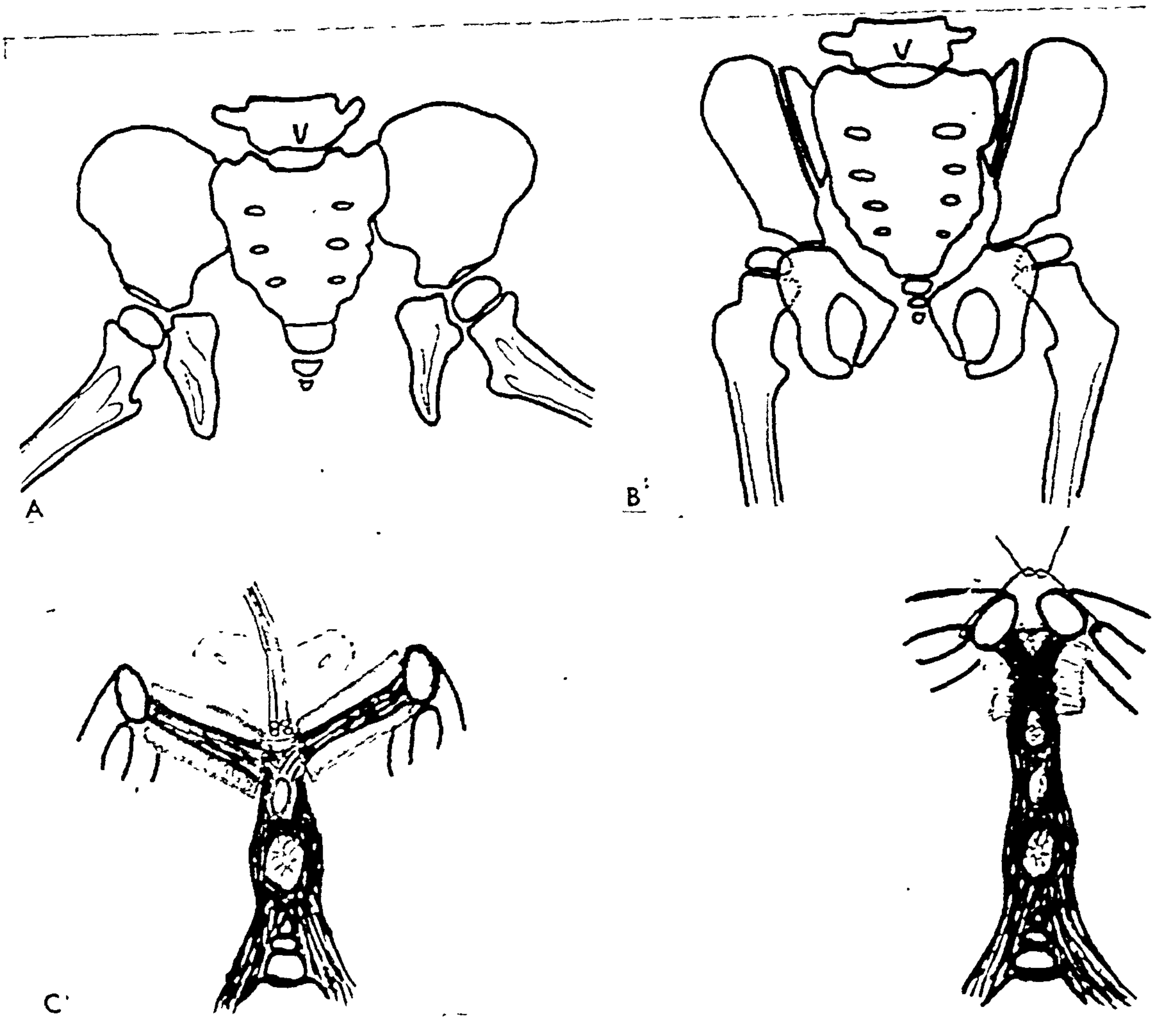

Fig. 3.—*A*, normal positioning of hips. *B*, first steps of author's technic. *C*, suturing technic (see text).

mies of the os ilium. If so, Dr. Schwartzmann and I will have unwittingly resurrected an old idea, but the result must still be considered a most fortunate event in this instance.

I leave it to the orthopedic surgeons to discuss, pro and con, the effect Dr. Trendelenburg's technic of manually producing a separation at the sacroiliac synchondrosis, if it were permanently successful, would have on the stability and weight-bearing ability of the pelvic girdle, which must support the entire upper portion of the human body. It is my personal opinion, however, that any procedure which resulted in producing unstable sacroiliac joints would result in undesirable orthopedic disability.

I recognize the fact that many and various procedures for the attempted correction of the exstrophic bladder are old, going back at least a century. I have no knowledge, however, of any previous attempt to combine them with bilateral osteotomy of the os ilei, and therefore, until this is proved incorrect, I present the operation as a new approach to this problem.

Fig. 4.—Postoperative photograph of child D. K.

The ideal sought after in such cases is to produce a bladder of normal bladder form, return it to the position nature intended it to occupy, so that it possesses or will develop adequate capacity and be able to retain, initiate and forcefully expel the urine, in addition to cutting off the urinary stream completely after total emptying of the bladder, without incontinence or dribbling.

Even though these ideals are not attained in every case, one may attain results greatly preferable to those of ureterosigmoidostomy and other procedures that have been been tried. If one fails these other procedures can still be carried out.

REPORT OF CASE

D. K., aged 2½ years (Fig. 1), was born with exstrophy of the urinary bladder and prolapse of the rectum with incontinence of feces. She was first seen by me on Dec. 6, 1954. Two operations had already been done on the rectum; the first via the abdominal approach, at which time it was reported that a uterus, tubes, ovaries and a vagina were present. An attempt to elevate the rectum was unsuccessful as to incontinence of feces. A second operation, on the rectal sphincter, was done at Children's Hospital and was successful.

The child was admitted to St. Mary's Hospital in February 1955, and on February 18 Dr. John R. Schwartzmann performed the osteotomy.

Operative Report of Dr. Schwartzmann.—"2-18-55. This child has been seen and followed in Crippled Children's Division. She has a complete exstrophy and a congenital anomaly of the pelvis in that the pubic bones and the pelvic arch pass directly anteriorly from the sacroiliac joint and the symphysis lies about 3 inches (7.5 cm.) apart. This results in an external rotation of the hips and the child walks with a waddling gait, grossly unstable on both sides although hips themselves are in joint. Dr. Shultz has worked the child up and plans to repair the bladder, returning it to the abdominal cavity, but has felt that this particular procedure would be facilitated if the pubes could be brought together and a symphysis restored to allow better closure of the abdominal wall over a reconstructed bladder. It was possible passively to compress the pelvis to a degree and it was felt that an osteotomy of the ilium through the greater sciatic notch would be of value in allowing some collapse and reshaping of the pelvic inlet to allow approximating the pubes toward forming a symphysis. Besides this particular restoration it would also allow better positioning of the hips for walking.

"On 2-18-55 (Fig. 2*A*), under general anesthetic, after usual surgical preparations, with the child in the prone position, the posterior ilium was exposed by anatomic dissection through an incision over the posterior iliac crest and the lateral table was exposed subperiosteally. The greater sciatic notch was exposed. With an osteotome the outer table was osteotomized, carrying down to the inner table of the ilium, and this was partially osteotomized. It was possible then to do an osteoclasis and turn the wing and pubes forward towards the midline. This wound was closed in anatomic layers with interrupted deep catgut and black silk to the skin. An identical procedure was carried out on the opposite side (Fig. 2*B*). On completion of the procedure it was possible to bring the pubic bones to within ¾ inch (1.9 cm.) of each other and this resulted in normal positioning of the hips (Fig. 3, A *and B*). An Elastoplast retaining dressing was applied, and the child was immobilized in bed in a pelvic sling. A second stage procedure within two or three weeks can be carried out by Dr. Shultz and following this an attempt will be made to complete restoration of the symphysis pubis and restore a pelvic arch for this child."

Signed: *Dr. J. R. Schwartzmann*

On March 4, I operated on the child. Two incisions were made in the mucosa from the lower end of the trigone almost to the opening of the vagina, one on each side, in such a manner that a ⅛ inch (0.32 cm.) strip of mucosa was left at the base where a urethra was to be constructed (Fig. 3*C*). The mucosa was then incised over each sphincter muscle, and flaps of mucosa were laid back from each muscle so that they were denuded completely. The bladder was then completely freed from the edges of the skin and also separated from the peritoneum to such an extent that it could be held like a cyst and depressed into the pelvic portion of the abdomen quite readily. The edges of the skin were then dissected free from the abdominal muscles, which exposed them for about 1 inch (2.5 cm.) on each side. Four strands of heavy vitallium wire were then laid in the midline over the strip of mucosa that had been left for a urethra. These strands, employed to serve as a urethral splint, were long enough to insure that their upper ends could be left out through the suprapubic opening and their lower ends left out through the urethra, with sufficient length remaining to tie these ends together outside, forming a complete loop (Fig. 2*B*), insuring against any

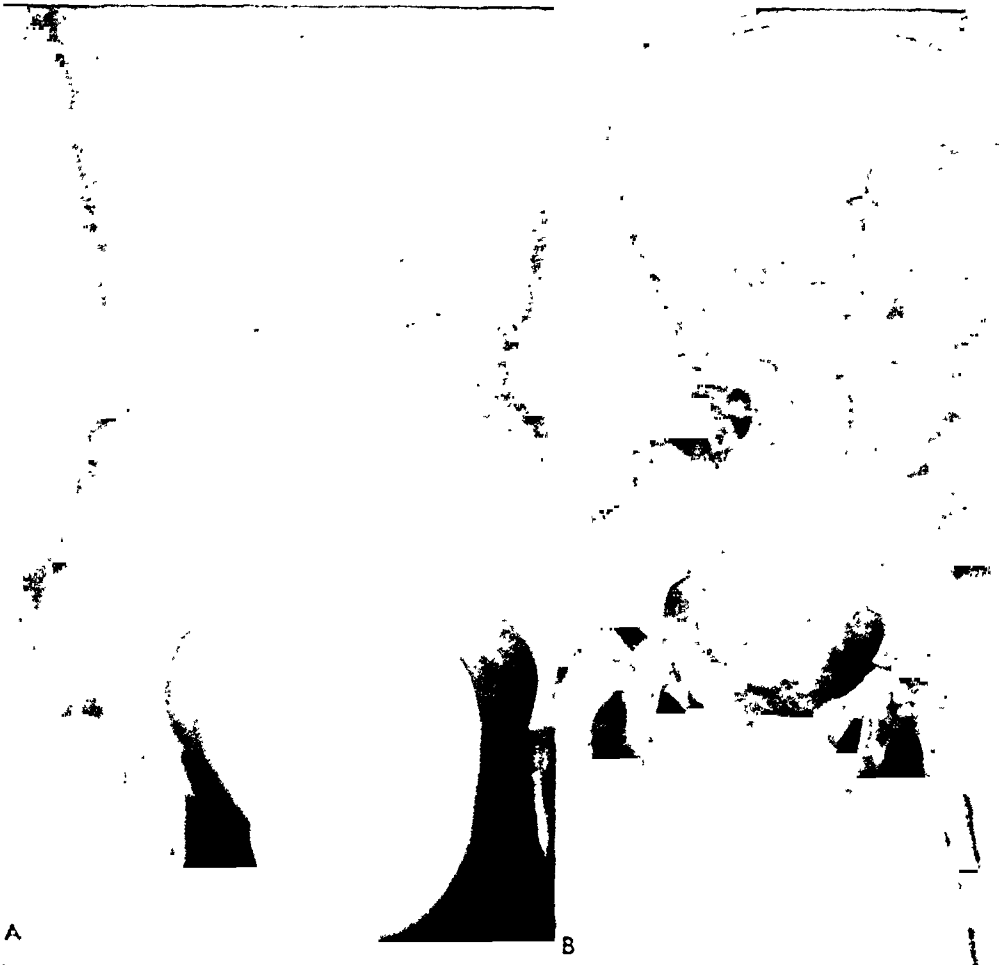

Fig. 5. *A*, roentgenogram showing corrected bladder (see text). *B*, intravenous pyelogram. Conditions normal.

possibility that they might get out of position or be lost. Two triple 000 interrupted chromic catgut sutures were then placed in each arm of the sphincter muscles in such a manner as to approximate them in front of the splint. This represented the start toward construction of a sphincter and a urethra. The edges of the bladder were then brought together above this with interrupted double 00 chromic catgut sutures. A No. 16 Foley catheter was placed in the bladder at the uppermost end, where the splint likewise emerged from the now completely constructed bladder. At this stage Dr. Schwartzmann entered the operation, dissecting out each pubic bone and inserting two double coarse silk sutures around each, pulling them as close *together as possible with the tie (Fig. 3C).* Two more triple 000 chromic catgut sutures were then placed in the sphincter muscles and the mucosal flaps sutured together in front of the sphincter with the same material.

The abdominal muscles and fascia were then sutured together with No. 0 interrupted chromic catgut sutures, and the edges of the skin were closed with continuous interlocked silk sutures.

Progress was quite satisfactory, but after ten days I decided that the vitallium wire I had used as a splint was too heavy and replaced it with 4 strands of coarse silk, which I considered much more comfortable and not nearly so likely to produce cutting or pressure necrosis in the region of the urethra.

The next operative procedure was done four weeks after construction of the bladder, at which time (April 1), I replaced the silk urethral splint with a No. 10 Foley catheter, removed the suprapubic catheter, and removed the granulation tissue around the suprapubic opening, closing it with silk sutures.

The suprapubic wound healed by first intention in spite of the fact that the No. 10 Foley catheter left indwelling through the urethra did not function perfectly. Six weeks after reconstruction of the bladder this catheter was removed. The patient was incontinent for thirty-six hours after its removal but then became continent except when agitated or crying. Within a week she had satisfactory control, with evidence of increasing bladder capacity (Fig. 4).

Three years have now elapsed since the operation. The child has not worn corrective shoes for the past year. She is attending school, with no restrictions placed on her activities at any time. Her teacher has been requested to permit toilet privileges on request, because the urge to void makes the child uncomfortable if it is not heeded with reasonable promptness. The bladder's capacity, however, is now 8 ounces (Fig. 5*A*), with no incontinence, no residuals and no enuresis. Intravenous pyelograms (Fig. 5*B*) are normal. This should, in my opinion, be classified as an ideal result.

COMMENT

I am grateful for the Providence that brought Dr. Schwartzmann and me together in this case and made it possible for us to combine these two procedures with such a complete success.

The rapidly growing bony tissues of the young do not offer much resistance to constantly applied pressure and may readily be molded into their form. Trendelenburg has pointed out that this is well illustrated by the formerly common practice of binding the feet of young Chinese women. It is also well illustrated by the pointed craniums of some uncivilized tribes. Some, therefore, may wish to approach the problem through some type of molding procedure.

What about the application of the technic here recommended when a small bladder is present? It still should be an indispensable aid to constructing a functioning sphincter, and since skin from the penis and scrotum is used to construct a urethra, why not use it here? When osteotomy is done and the pubic bones are brought together there will be more than enough skin to cover the abdominal muscle closure, so why not, in such cases, take enough from that bordering the bladder to construct one of sufficient size? True, the skin will not be contractile and such a bladder may not empty completely, but the true vesical tissue might in time increase in size to a point that would permit removal of the portion constructed of skin.

At what age should this procedure be carried out? In the case here presented it was done when the patient was just under the age of 3 years. The result has been reported. Dr. Schwartzmann has said that in his opinion the patient should approximate this age before osteotomy is done. I concur, since the sphincter muscle is sufficiently developed at that age to permit better identification and therefore to lend itself more readily to the procedure.

These and many other questions, however, I do not pretend to be capable of answering positively. I only hope that this presentation will stimulate sufficient effort to produce the answers and arrive at the ideal results in most such cases.

SUMARIO

Demonstra o uso osteotomia bilateral do osso iliaco como parte da correçao cirurgica da ectopia vesical. Acentua duas vantagens: a-o esfincter uretral pode ser reconstruido com os feixes musclares sem desinseçao ou dano a suplencia nervosa e vascular; b- o resultado na aproximaçao dos ossos pubicos permite o fechamento abdominal sem necessidade de tecnica complementar.

Apresenta um caso de uma menina de 2 anos de idade com resultado excelente.

RIASSUNTO

L'autore descrive l'osteotomia bilaterale dell 'osso iliaco come tempo della cura chirurgica dell'ectopia vescicale. Si ottengono due grandi vantaggi: a) che lo sfintere dell'urethra può essere ricostruito senza staccarlo dalle sue inserzioni sulla pelvi, rispettando cosi tanto le sue connessioni vascolari che quelle nervose; b) che si ottiene unamiglior avvicinamento delle ossa pubiche il che consente una chiusura dell'addome senza dover ricorrere ai metodi di scivolamento e quindi una maggiroe solidita.

Viene presentato il caso di una bambina di meno di due anni di età in cui il risultato fu eccellente.

RESUMEN

El autor propone la osteotomía bilateral del ilion como parte de la corrección de la ectopia vesical. Señala que con esto se obtienen dos ventajas importantes: (a) que esfinter de la urethrapuede ser reconstruído con las ramas de este músculo sin separación de sus inseciones en el hueso pelviano evitándose así el daño a la irrigación o inervación del músculo, y (b) que se obtiene una aproximación de los huesos pubis lo que permite un cierre de la herida abdominal un caso de una niña de menos de dos años en la cual el resultado fue excelente.

ZUSAMMENFASSUNG

Der Verfasser beschreibt die doppelseitige Osteotomie des Darmbeins als Teil der chirurgischen Korrektur der Harnblasenektopie. Er weist darauf hin, dass sich auf diese Weise zwei Vorteile erzielen lassen. Erstens lässt sich aus den Muskelarmen ein Harnröhrensphinkter herstellen, ohne dass die Muskeln von ihrem Ansatz am Beckenknochen getrennt werden; auf diese Weise wird eine Schädigung oder Zerstörung der Blut oder Nervenversorgung dieser Muskeln vermieden. Zweitens wird eine enge Annäherung der Schambeine erzielt, was eine Schliessung der Bauchwand ohne "Gleitverfahren" gestattet und zur Entstehung einer starken Bauchwand führt. Es wird über den Fall eines weniger als zwei Jahre alten Mädchens berichtet, bei dem die Operation zu einem ausgezeichneten Ergebnis führte.

RÉSUMÉ

L'auteur présente une technique d'ostéotomie bilatérale de l'ilion, faisant partie de la correction chirurgicale de l'ectopie vésiculaire. Cette méthode présente les avantages suivants: a) formation d'un sphincter uréthral à partir des branches de ce muscle sans les séparer de leurs attaches pelviennes, évitant ainsi des

troubles de la circulation sanguine et veineuse; b) approximation étroite des os pubis qui permet une fermeture abdominale supprimant la technique par coulissage, et procure ainsi une paroi abdominale résistante. L'auteur décrit le cas d'une fillette de moins de 2 ans où les résultats se sont révélés excellents.

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Urethrograms in the Diagnosis and Management of Benign Prostatic Hypertrophy*

DONALD ROLNICK, M.D., ROLAND R. CROSS JR., M.D., AND
FREDERICK A. LLOYD, M.D.

HINES, ILLINOIS

Preoperative and postoperative urethrographic studies were performed on a series of patients who had undergone surgical treatment for benign prostatic hypertrophy. The right oblique urethrogram proved most useful in this series from the diagnostic point of view. When the size of the prostate gland is difficult to evaluate on rectal examination and cystoscopic study, the urethrogram can be of great aid in giving an accurate indication of the size of the gland. The authors point out that it is difficult to correlate the patient's subjective complaints with data obtained by objective methods.

THE use of ureothrograms in the diagnosis of benign prostatic hypertrophy and in the evaluation of the end results of prostatic surgical treatment has been emphasized in the past. Nevertheless, urethrographic study has never been widely used by urologists in their management of prostatism. In this study urethrograms were taken of a series of patients, preoperatively and postoperatively, who were surgically treated for benign prostatic hypertrophy. An attempt was then made to correlate these urethrograms, preoperatively and postoperatively, with certain objective signs and subjective symptoms. The objective criteria were the results of rectal examination, cystoscopic study, tests for residual urine and microscopic examination of the urine. The subjective symptoms were nocturia, urgency, frequency, burning on urination and difficulty in starting and stopping the urinary stream. Preoperative urethrograms were taken of 34 patients. Of this group, 28 underwent transurethral resection of the prostate; on the remaining 6, retropubic prostatectomy was performed. It was possible to follow 24 of these patients for three months, and 17 for six months, after the operation. With every patient the following measures were taken before and after the operation: 1. Anteroposterior and right oblique urethrograms were obtained. 2. Rectal examination, cystoscopic study, tests for residual urine and microscopic examination of the urine were done. 3. All patients were questioned with regard to subjective symptoms referable to the urinary tract.

In some of the patients air was used as a contrast medium. It was observed, however, that air was not of great value except when associated vesical disease was present or there was intravesical protrusion of the prostatic lobes. In addition, the use of air required more roentgen studies, made the procedure more difficult and added to the discomfort of the patient. An ordinary urethrogram appeared to be best suited for this particular study.

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*Awarded Second Place, Chicago Urological Society Residents' Prize Essay Contest, December [illegible].

From The Urology Service, Hines Veterans Administration Hospital, Hines.

Submitted for publication June 11, [illegible].

The urethrographic medium was 30 per cent Skiodan in 0.5 per cent methyl cellulose. This medium proved to have excellent radiopacity, was relatively nonirritating to the urethral mucosa, and had a viscosity that made it easy to inject.

The Brodny clamp (Fig. 1*A*) was used to take the urethrograms. In order to obtain the best results with this instrument the plunger should be inserted into the urethral meatus as far as possible, and the prongs should be placed on the corona of the glans penis as tightly as possible.

Fig. 1*B* shows a patient in the right oblique position with the Brodny clamp attached to the penis. The right oblique urethrogram was the best for diagnostic purposes in this study, and all of the following diagrams and urethrograms are in the right oblique position. Fifteen to 20 cc. of the medium was injected for each urethrogram, the film being taken as the last 1 or 2 cc. was injected. Tension was maintained on the penis in order to obliterate the penile folds, and the patient was instructed to breathe normally while the film was taken, so that the external sphincter would appear normal.

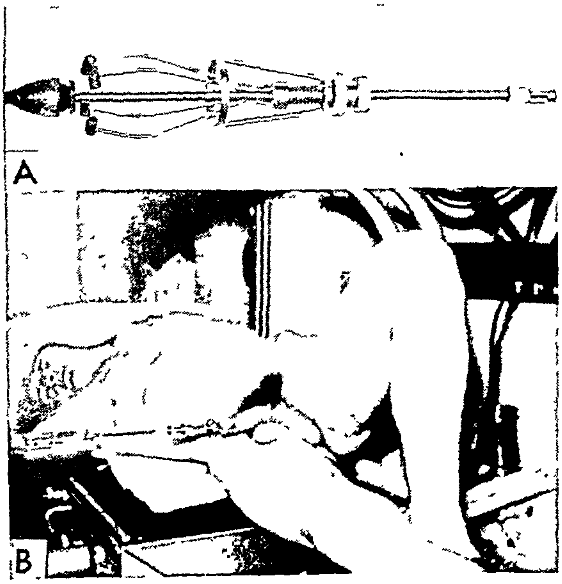

Fig. 1.—*A*, Brodny clamp; *B*, patient in right oblique position with Brodny clamp attached to penis.

Figure 2*A* is a diagram of a normal urethrogram. Only the anatomic features of the posterior portion of the urethra have been emphasized, since in this study we were primarily interested in that area. The verumontanum, represented as a speckled area on the diagram, appears as a filling defect on the actual urethrogram.

A normal urethrogram is shown in Figure 2*B*. The irregularity of the bladder is due to incomplete filling of that organ by the urethrographic medium.

Figure 3*A* is a diagram of benign prostatic hypertrophy. The four cardinal features of this condition as seen on the right oblique urethrogram are shown: (1) anterior-posterior spreading, representing enlargement of the lateral lobes; (2) anterior tilting of the posterior portion of the urethra, representing enlargement of the middle lobe; (3) a defect of the base of the bladder, representing intravesical protrusion of the prostatic lobes, and (4) elongation of the posterior portion of the urethra, which occurs in all cases of prostatic enlargement.

In Figure 3*B* a urethrogram of a patient with benign prostatic hypertrophy shows anterior-posterior spreading, indicating enlargement of the lateral lobes, and anterior tilting of the posterior portion of the urethra, indicating enlargement of the middle lobe. Figure 4*A* is another urethrogram of a patient with benign prostatic hypertrophy showing elongation of the posterior portion of the urethra, a defect at the base of the bladder, representing intravesical protrusion of the prostatic lobes, and anterior-posterior spreading.

Figure 4*B* is a urethrogram of a patient with carcinoma of the prostate.

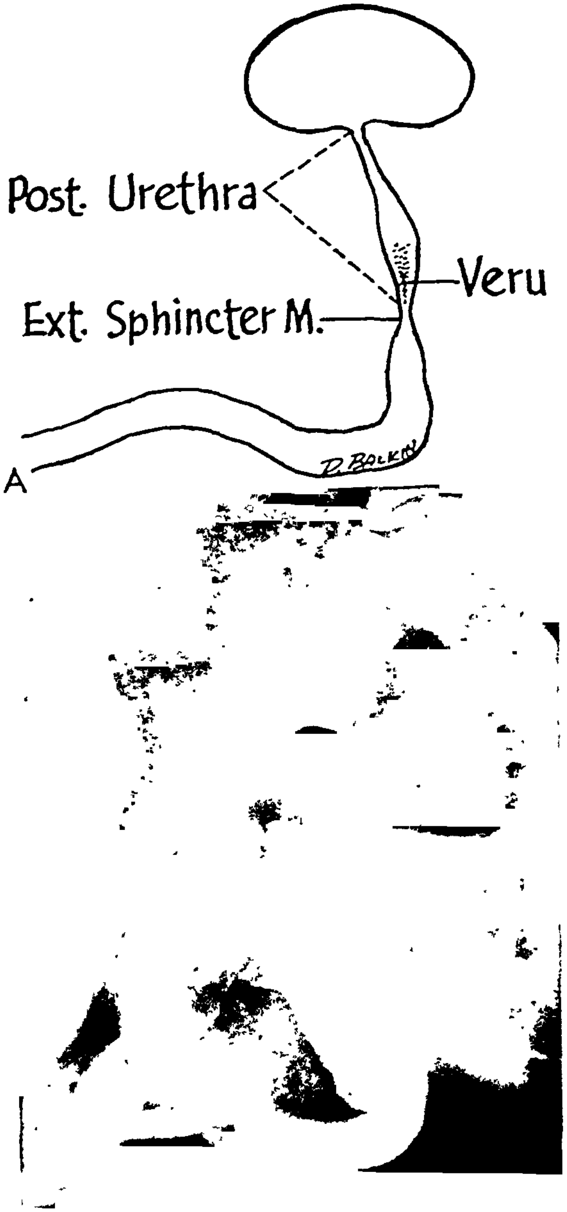

Fig. 2.—*A*, diagram of normal urethrogram. *B*, normal urethrogram.

This patient was not a part of our study, but his urethrogram is interesting because it shows, in addition to carcinoma of the prostate, prostatic enlargement and chronic prostatitis. Carcinoma of the prostate is demonstrated by the straightening, narrowing and irregularity of the posterior portion of the urethra. Prostatic enlargement is shown by elongation of the posterior portion of the urethra, a bladder base defect and some anterior-posterior spreading. The presence of dye in dilated prostatic ducts indicates chronic prostatitis.

The remainder of the urethrograms are preoperative films and films taken six months after the operation.

Figure 4*C* is a preoperative urethrogram of a patient who underwent transurethral resection of the prostate. The size of the prostate was difficult to estimate accurately by rectal and even by cystoscopic examination. As a result, there was some question as to whether an open prostatectomy or a transurethral resection should be performed. The urethrogram demonstrated the prostate to be of the size amenable to transurethral resection, and on the basis of the urethrogram a decision to perform a transurethral resection was made. Six months after the operation

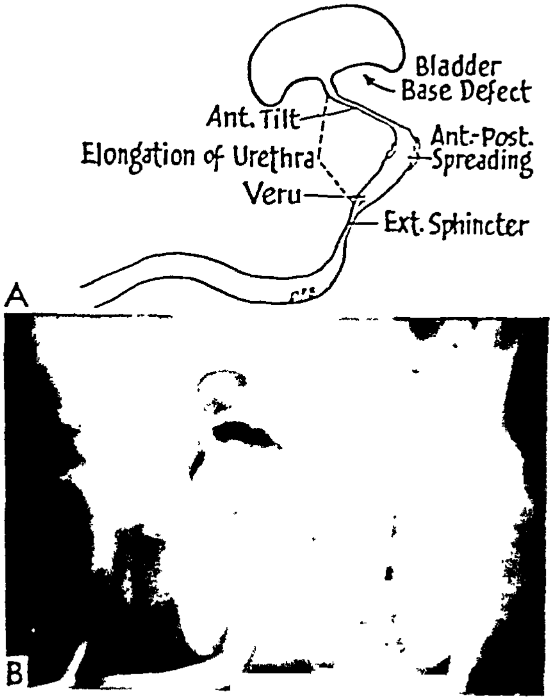

Fig. 3.—*A*, diagram of benign prostatic hypertrophy. *B*, urethrogram of patient with large prostatic hypertrophy (see text).

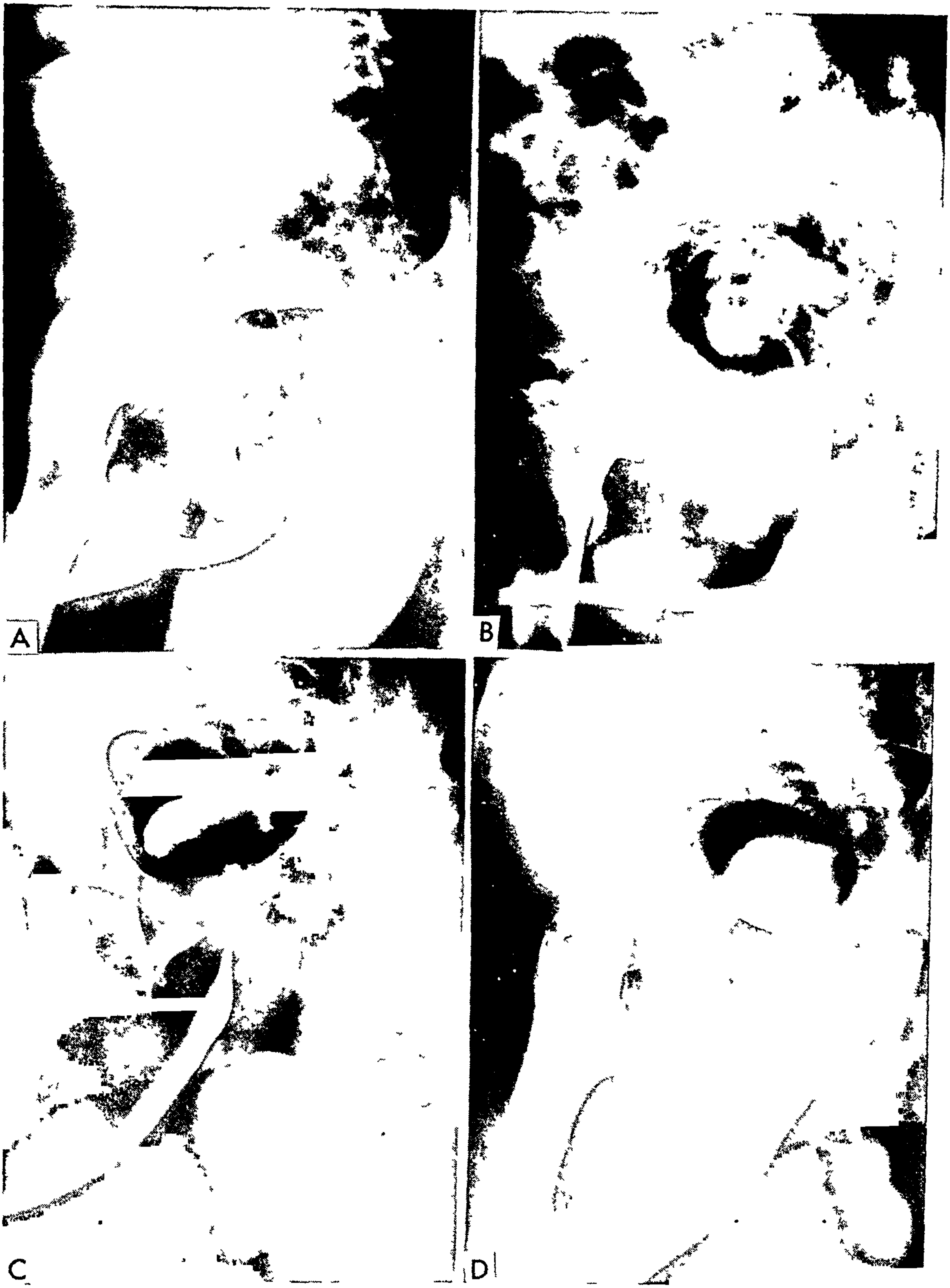

Fig. 4.—*A*, another urethrogram showing benign prostatic hypertrophy (see text). *B*, urethrogram of patient with prostatic carcinoma. *C*, preoperative urethrogram of patient who underwent transurethral prostatic resection. *D*, postoperative urethrogram of patient in *C*.

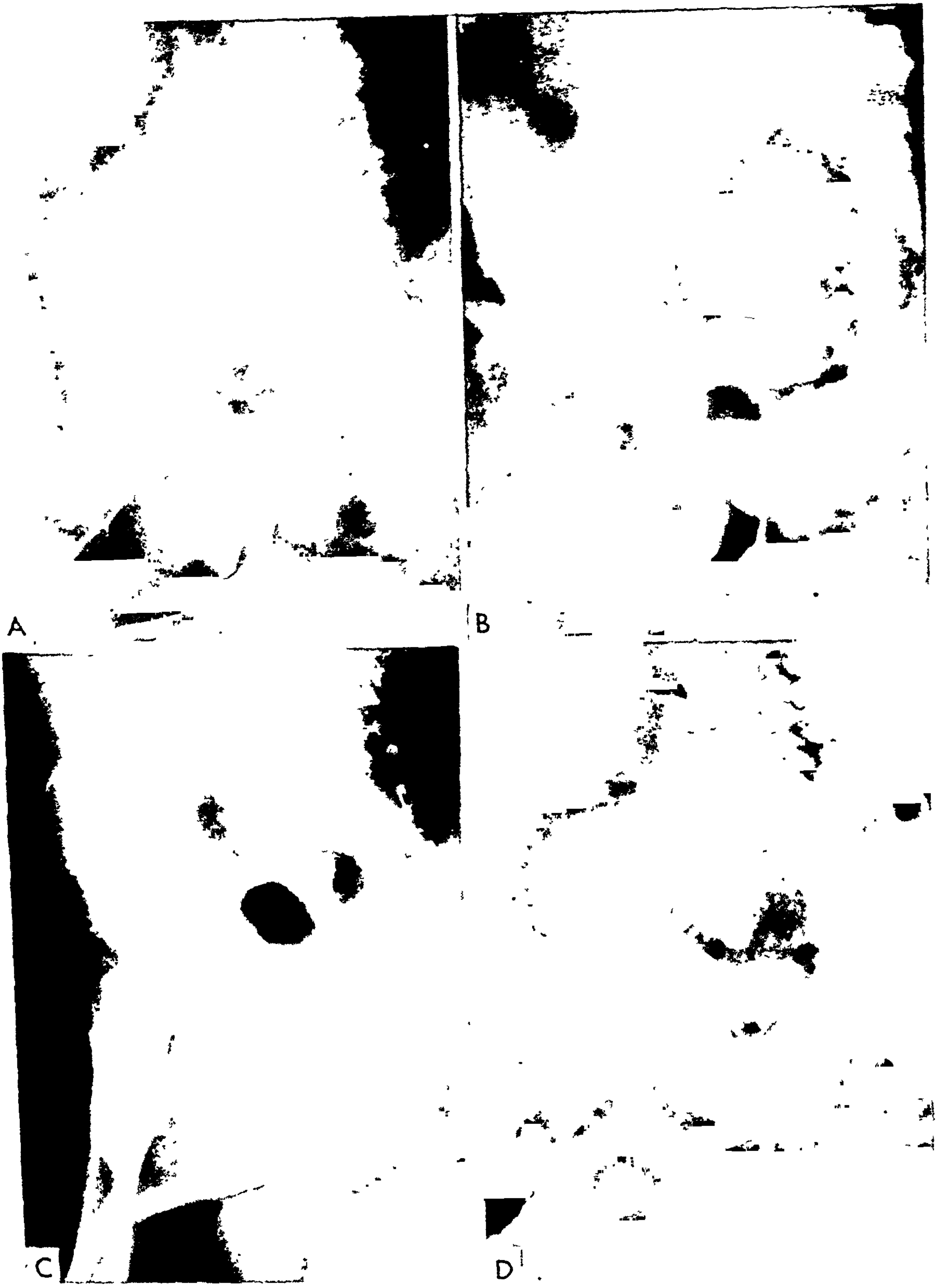

Fig. 5 — *A*, urethrogram of patient with pronounced benign prostatic hypertrophy. *B*, urethrogram taken six months after operation, showing complete removal of prostate. *C*, preoperative urethrogram of patient on whom transurethral resection was performed for benign prostatic hypertrophy. *D*, postoperative urethrogram of patient in *C*, showing residual prostatic tissue.

the urethrogram (Fig. 4*B*) showed a large, smooth cavity in the posterior portion of the urethra, indicating the prostate had been well resected. Preoperatively this patient's prostate was enlarged (2 plus) on rectal examination; residual urine (5 ounces) was present, and microscopic study of the urine revealed 5 to 10 leukocytes per high power field. Cystoscopic study revealed moderate trilobar hypertrophy of the prostate. The patient had nocturia, rising three or four times nightly; urgency, frequency, burning on urination, and difficulty in starting and stopping the urinary stream. Six months after the operation there was 10 cc. of residual urine. The prostate was not enlarged on rectal examination, and the urine was microscopically clear. Cystoscopic study revealed a good prostatic resection, with no residual prostatic tissue. The patient, however, still had nocturia (two or three times nightly), as well as frequency and occasional urgency of urination. In this case we were able to correlate the urethrogram with the objective signs but not with the subjective symptoms.

A urethrogram of a patient with pronounced benign prostatic hypertrophy is shown in Figure 5*A*. This patient underwent retropubic prostatectomy. Figure 5*B* is a urethrogram taken six months after the operation, demonstrating complete removal of the prostate gland. Preoperative cystoscopic study revealed large trilobar hypertrophy of the prostate. On rectal examination the prostate was enlarged (4 plus); there was residual urine (7 ounces) and on microscopic examination the urine showed 10 to 20 leukocytes and 5 to 10 erythrocytes per high power field. The patient had nocturia five or six times nightly; urgency, frequency, burning on urination, and difficulty in starting and stopping the urinary stream. Six months after the operation cystoscopic examination revealed complete removal of the prostate, with no residual tissue present. The prostate was not enlarged on rectal examination, there was no residual urine, and microscopically the urine was clear. Aside from nocturia (once nightly) the patient had no urinary complaints. In this case we were able to correlate the urethrogram with both the objective signs and the subjective symptoms.

Figure 5*C* is a preoperative urethrogram of a patient who was subjected to transurethral resection for benign prostatic hypertrophy. Preoperatively the prostate was enlarged (1 plus-2 plus) on rectal examination, there was residual urine (3 ounces), and microscopically the urine showed 3 to 5 leukocytes per high power field. Cystoscopically there was a small trilobar hypertrophy of the prostate. The patient had nocturia two to three times nightly, occasional urgency, some frequency of urination and some difficulty in starting and stopping the urinary stream. Six months after the operation the prostate was enlarged (0.5 plus-1 plus) on rectal examination, residual urine amounted to 2½ ounces, and microscopically the urine showed 35 to 40 leukocytes per high power field. The patient had nocturia three or four times nightly, with urgency, frequency and burning on urination. Figure 5*D* is a urethrogram taken six months after the operation, demonstrating the presence of residual prostatic tissue by the bladder base defect. On the basis of this urethrogram a decision was made to perform a repeat transurethral resection. The presence of residual prostatic tissue was confirmed cystoscopically, and a repeat transurethral resection was performed. In this case we were able to correlate the urethrogram with both the objective signs and the subjective symptoms.

The accompanying table shows the correlations between the urethrogram, the objective signs and the subjective symptoms six months after the operation.

Correlations With Urethrograms Six Months After Operation

Objective signs	88.2%
Subjective symptoms	35.3%
Objective signs and subjective symptoms	23.5%

CONCLUSIONS

Urethrograms were taken, preoperatively and postoperatively, of a series of patients who had undergone operations for benign prostatic hypertrophy. An attempt was then made to correlate these urethrograms, preoperatively and postoperatively, with certain objective data and subjective symptoms of these patients.

Air as a contrast medium had little value in this particular study. Thirty per cent skiodan in 0.5 per cent methyl cellulose was an excellent urethrographic medium.

Urethrograms are presented. The right oblique urethrogram was found to be most diagnostic.

When estimation of the size of the prostate gland is confusing on rectal and cystoscopic examination the urethrogram can be of great value in giving an accurate indication of the size of the gland.

In this study there was a high correlation between the urethrogram and the objective observations (88.2 per cent). Correlation between the urethrogram and the subjective symptoms was poor (35.3 per cent). Correlation of the urethrogram with both the objective findings and subjective symptoms was even poorer (23.5 per cent).

These figures demonstrate what is frequently observed by urologists after any type of prostatic surgical procedure: namely, the fact that the patient's complaints are often difficult to correlate with the objective means of evaluating the end results of prostatic surgical treatment.

Although urethrographic study does not appear suitable for routine use in the diagnosis and management of benign prostatic hypertrophy, it is, in selected cases, a valuable addition to the armamentarium of the urologist in the management of prostatism.

CONCLUSIONS

Des uréthrogrammes pré- et post-opératoires ont été pratiqués dans une série de cas d'affections bénignes de la prostate, et on fait l'objet d'une étude comparative avec les symptômes objectifs et subjectifs.

L'air, en tant que moyen de contraste, a peu de valeur dans ces cas. Par contre une solution de 30% de "skiodan" dans 0.5% de méthyl-cellulose a donné d'excellents résultats.

Des uréthrogrammes caractéristiques sont présentés, le meilleur en vue du diagnostic étant l'uréthrogramme droit.

Cet examen peut être précieux lorsqu'il s'agit de préciser la dimension de la prostate après un examen rectal et cystoscopique non décisif.

L'auteur a constaté une corrélation étroite entre l'uréthrogramme et les données objectives (88.2%) ; cette corrélation a été beaucoup plus faible (35.3%) pour les symptômes subjectifs, et plus faible encore (23.5%) pour l'ensemble des symptômes objectifs et subjectifs.

Les chiffres indiqués confirment l'observation fréquente des urologues après n'importe quel type d'opération prostatique, à savoir que les plaintes du malade sont souvent difficiles à mettre en corrélation avec les moyens objectifs d'évaluation des résultats définitifs de la chirurgie prostatique.

Les examens uréthrographiques ne paraissent pas appropriés en tant qu'examens de routine pour le diagnostic et le traitement de l'hypertrophie prostatique bénigne, mais leur utilité est incontestable dans des cas sélectionnés.

CONCLUSIONES

Se ha hecho una serie de uretrografías en sujetos operados de tumores benignos de próstata antes y después de la operación; con ello se trata de relacionar los datos objetivos de las uretrografías con los síntomas pre postoperatorios de los enfermos.

El aire tiene poco valor como contraste; en cambio es excelente la solución al 30% de "skiodan" en un 0,5% de metil celulosa.

Se presentan algunas uretrografías como ejemplo; la proyección oblicua derecha es la de mayor valor diagnóstico.

Cuando el tacto rectal o el exámen cistocópico no son suficientes para valorar el tamaño de la próstata la uretrogragía es de gran valor.

En el 88% de los casos, los datos de la uretrografía han coincidido con los datos objectivos. En cambio sólo en el 30% coincidían con los síntomas subjetivos, y tan solo en el 23% de los casos con ambas cosas.

Estos números demuestran lo que los urólogos observan con frecuencia después de las operaciones de próstata% que las quejas del enfermo no coinciden con los resultados objetivos obtenidos después del tratamiento.

Aunque la uretrografía no parece ser necesaria para el estudio y diagnóstico ordinario de la hipertrofia benigna de próstata, sin embargo es muy útil como un elemento más en manos del urólogo cuando se enfrenta con casos difíciles.

SCHLUSSFOLGERUNGEN

Es wurden an einer Reihe von Kranken, die wegen gutartiger Prostataerkrankungen operiert wurden, vor und nach dem chirurgischen Eingriff urethrographische Untersuchungen ausgeführt. Danach wurde versucht, die prä-und postoperativen Urethrogramme mit gewissen objektiven Befunden und mit den subjektiven Erscheinungen der Kranken in Beziehung zu bringen.

In der vorliegenden Untersuchung hat sich Luft als Kontrastmittel von geringem Wert erwiesen. Dreissigprozentiges Skiodan in 0.5 prozentiger Methylzellulose war ein ausgezeichnetes urethrographisches Kontrastmittel.

Erläuternde Beispiele von Urethrogrammen werden gezeigt. Das Urethrogramm im rechten schrägen Durchmesser erwies sich als von grösstem diagnostischen Wert.

Wenn man in der Abschätzung der Grösse der Prostata durch rektale und zystoskopische Untersuchungen im Unklaren ist, kann das Urethrogramm sehr hilfreich sein und eine genaue Angabe der Grösse der Drüse hervorbringen.

Die vorliegende Untersuchung ergab eine hohe Übereinstimmung zwischen dem Urethrogramm und den objektiven Bemungen zwischen Urethrogramm und subobachtungen (88,2 Prozent). Übereinstimjektiven Erscheinungen waren schlecht (35,3 Prozent) und die zwischen Urethrogramm und der Kombination von objektiven Befunden und subjektiven Erscheinungen noch schlechter (23,5 Prozent).

Diese Zahlen zeigen, was der Urologe häufig nach allen Arten der Prostatachirurgie beobachtet, nämlich dass sich die Beschwerden des Kranken häufig schwer mit den objektiven Mitteln der Auswertung der Endergebnisse des chirurgischen Eingriffs an der Prostata in Einklang bringen lassen.

Wenn sich auch die urethrographische Untersuchung nicht als ein geeignetes routinemässiges Verfahren in der Diagnostik und Behandlung der gutartigen Prostatahypertrophie zu erweisen scheint, so stellt es doch in ausgewählten Fällen ein wertvolles Hilfsmittel im Rüstzeug des Urologen bei der Behandlung chronischer Prostataleiden dar.

CONCLUSOES

Foram feitos uretrografias de pacientes no pre e pós operatorio de afecções prostáticas benignas. Foi feita tentativa de comparação entre esses filmes e os achados objetivos e os sintomas apresentados pelos pacientes.

O ar como contraste se mostrou de pouco valor neste estudo. Foi excelente a solução a 30% de skiodoan em 5% de metilcelulose.

O uretrograma direito foi considerado de melhor esclarecimento diagnostico. Quando a estimativa do tamanho da prostata não é precisa durante o exame retal ou a cistoscopia o uretrograma dá uma indicação acurada do volume glandular. Neste estudo houve grande correlação entre os dados objetivos e os uretrogramas (88.2%); correspondencia precaria entre a uretrografia e os sintomas (35.3%), e mais precarias ainda as comparações entre os dados do exame e os sintomas (23.5%).

Estas cifras demonstram o que tem observados os urologistas neste tipo de cirurgia da prostata; que isto ocorre principalmente na interpretação dos sintomas dos pacientes que são dificilmente relacionados com os achados clinicos e os meios de avaliar os resultados finais do tratamento cirurgico. Embora essas uretrografias não possam constituir um método de rotina se mostram altamente eluvidativas, nos casos selecionados, para orientação nos casos de prostatites.

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The art of the practice of medicine is to be learned only by experience: 'tis not an inheritance: it cannot be revealed. Learn to see, learn to hear, learn to feel, learn to smell, and know that by practice alone can you become expert.

—*Osler*

Complete Replacement of the Urinary Bladder With Ileum Anastomosed to the Urethra

Experiments on Dogs

ALBERT E. GOLDSTEIN, M.D., F.A.C.S., F.I.C.S., D.A.B., BALTIMORE, MARYLAND
CAFER YILDIRAN, M.D., ISTANBUL, TURKEY,
ROBERT B. GOLDSTEIN, M.D., BALTIMORE, MARYLAND
MORTON GOLDFARB, M.D., ROCKVILLE CENTER, NEW YORK,
AND
HENRY NATHANS, M.D., ISRAEL

THIS *work is based purely on an experimental* study of the subject. The study has been going on for approximately three years and is the outcome of some of our other work on substitute bladders in dogs. We have attempted various types of substitute bladder operations, but this article will be confined to the construction of a complete urinary bladder, after total cystectomy, from a segment of ileum anastomosed to the urethra, so that urine may pass through the urethra and maintain a normal intestinal passage.

The study has been made because of our unsatisfactory results with the conventional ureterosigmoid anastomoses both in dogs and in man. Reports from other clinics are similar. Here and there we, as well as others, have obtained good results even over a period of time, but ultimately some type of morbidity, such as ascending renal infection, with renal damage that progresses in many cases to uremia, results in death (Lapides, 1951; Jacobs and Stirling, 1952).

Both the large and the small intestine have been used for bladder reservoirs by attaching a loop of either to the bladder to increase the capacity (small intestine, von Mikulicz, 1899; large intestine, Birnbaum, 1920).

We were attempting to simulate human conditions in which total cystectomy was necessary and then to substitute a reservoir for the urine to be passed through its normal urethral channel.

Bisgard (1943), Rubin (1946) and Goldstein, Sachs and Rubin (1950) produced, both experimentally and clinically, a urinary reservoir with a segment of sigmoid anastomosed to the urethra. We performed 11 operations on dogs, using the sigmoid, with perfect urinary continence in 7 that survived for more than five years. That which may occur in an animal may not always occur in a human being, and vice versa. In 2 clinical cases there was partial failure. Our failures may have been due to our poor selection of 2 patients with general carcinomatosis, primarily in the urinary bladder. Total cystectomy was performed and a sigmoid urinary bladder anastomosed to the urethra. The urine passed through the urethra, but both patients died of general carcinomatosis.

Various other procedures have been performed in the past few years, accomplishing the construction of a conduit (Bricker, 1952; Gilchrist, 1950) or a urinary reser-

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From the Hoffberger Urological Research Laboratory, Sinai Hospital, Baltimore.

Read at the Twenty-Third Annual Congress of the United States and Canadian Sections, International College of Surgeons, Los Angeles, March 9-14, 1958.
Submitted for publication May 5, 1958.

voir (Wells, Pyrah, 1956) with a colostomy.

Mechanically these perform fairly well, but dissatisfaction arises from inability to care for the urine or the fecal contents satisfactorily, producing a mental hazard to the patient.

More recently, in 1957, Giertz and Franksson used the same procedure with sigmoid in 4 human patients, 2 of whom died.

Tasker in 1953 developed a technic in which an isolated loop of small bowel is cut open and sutured to the bladder. Giertz and Franksson, in 1957, developed a similar technic and attached a loop of ileum to the bladder but used it as a urinary reservoir anastomosed to the urethra. They employed this in man. In their 13 cases the loop, either open or closed, was anastomosed to the bladder. Twenty-three patients were subjected to total cystectomy and the anastomosis of the open loop was made to the urethra. In 20 of these the ileum, and in 3 the sigmoid, was employed.

Pyrah, in 1956, used a similar technic in anastomosing a loop of small intestine to the prostatic portion of the urethra.

Independently, we began using an isolated loop of small intestine anastomosed to the urethra in 1954.

Material.—We used 10 dogs of varying size and weight. It was purely an animal experimental procedure to determine the value of a segment of ileum as a complete bladder substitute and the feasibility of its use in man when total cystectomy is necessary, particularly in cases of carcinoma of the bladder.

Our experience has been different from that reported by Giertz and Franksson, who applied the procedure in man.

In our 10 cases, 8 dogs died and 2 are living, which gives us a mortality rate of 80 per cent against Giertz and Franksson's report of 27.7 per cent.

An experimental procedure is described, in which a substitute bladder was constructed in the dog by means of a blind loop of ileum anastomosed to the urethra. Although the results demonstrated perfect continuity of the intestinal passage and also of the ileourethral anastomosis, which permitted urine to pass through the normal urethra, serious postoperative complications arose in most of the dogs. In the authors' opinion this procedure, which if perfected would have great value when total resection of the bladder is necessary because of carcinoma, is probably much more feasible in man than in the experimental animal, since any complications that arise can be better dealt with in clinical than in experimental surgery.

In the 18 cases they reported an open loop ileourethroplasty and total cystectomy were performed, while we used the blind loop for ileourethroplasty.

Method of Procedure.—The dog was prepared as for any other intestinal operative procedure. The bowel was thoroughly cleansed for two days before the operation, and at the same time antibiotics were administered.

Preoperative intravenous pyelograms were taken, and chemical studies of the blood were made. An incision was made in the midline for about 12 cm. upward from the symphysis pubis (Fig. 1*A*). After the peritoneum was opened, the omentum was elevated upward for inspection of the bowel (Fig. 1*B*).

The bowel was carefully elevated to reach the cecum. The ileum was then traced for about 12 cm. from the cecum, and an area of ileum was selected in which

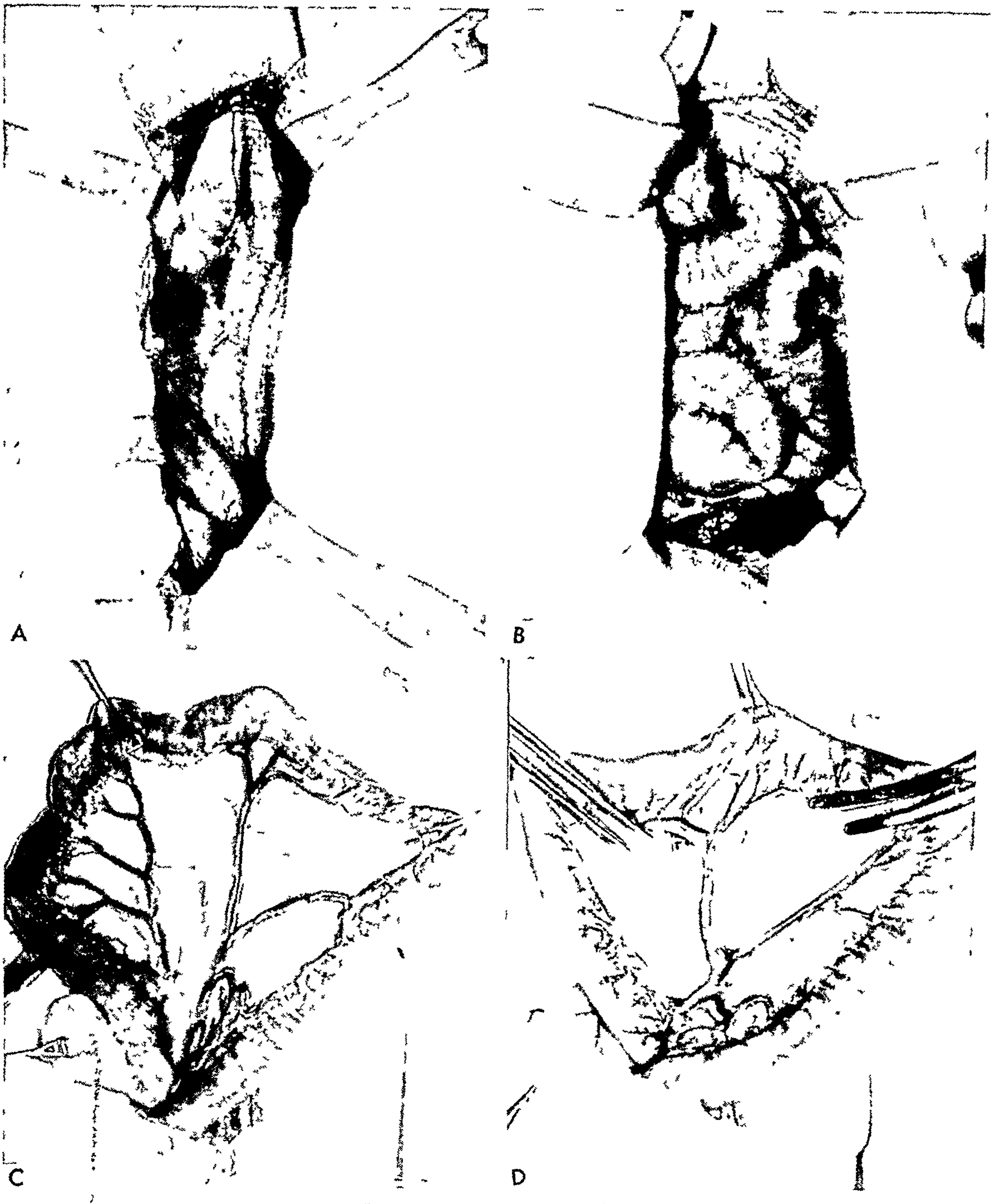

Fig 1.—*A*, incision to peritoneum. *B*, exposure of bowel *C*, exposure of ileum. *D*, segment of ileum to be resected.

the blood supply appeared to be adequate (Fig. 1*C*).

About 12 to 15 cm. of ileum was selected for the ileal bladder. This area was resected between rubber-shod clamps and the loop brought down toward the bladder region (Fig. 1*D*). End-to-end anastomosis of the ileum was accomplished by using

No. 000 chromic catgut through and through continuous sutures and No. 0000 interrupted silk seroserosal sutures (Fig. 2*A*). The gap in the mesentery was closed with a No. 000 continuous catgut suture. Care was taken not to close the gap too tightly, so that it would not obstruct the vascular pedicle.

Both ureters were then identified, and total cystectomy was performed at the urethrovesical anastomosis (Fig. 2*B*).

The free ileal segment was irrigated with warm saline solution.

The proximal end of the ileal loop was now closed with three rows of sutures, first an interrupted Connell catgut through-and-through stitch, then a second row of No. 000 chromic catgut and finally a third row of No. 0000 interrupted silk stitches.

Next, the anastomosis between the ileal segment and the proximal part of the urethra was made. For this we used a No. 000 chromic catgut through-and-through suture and a second row of No. 0000 silk interrupted sutures in the seromuscular area. This made a tight ileourethral anastomosis (Fig. 3, *A*, *B* and *C*).

Both ureters were "fishmouthed" and placed in the ileal loop, posteriorly in 5 cases and anteriorly in 5.

The openings for the ureters in the ileal bladder were closed with one or two interrupted catgut sutures, with avoidance of too tight or too loose a closure. The omentum was brought down over the ileal bladder, which was left free in 5 cases; in the other 5, a suture was taken through the serosa of the ileal bladder and attached to the omentum to prevent too much movement of the new bladder. The abdomen was closed with two rows of No. 0 chromic catgut and the skin with No. 000 subcutaneous catgut.

Intravenous dextrose was given postoperatively for about twenty-four hours.

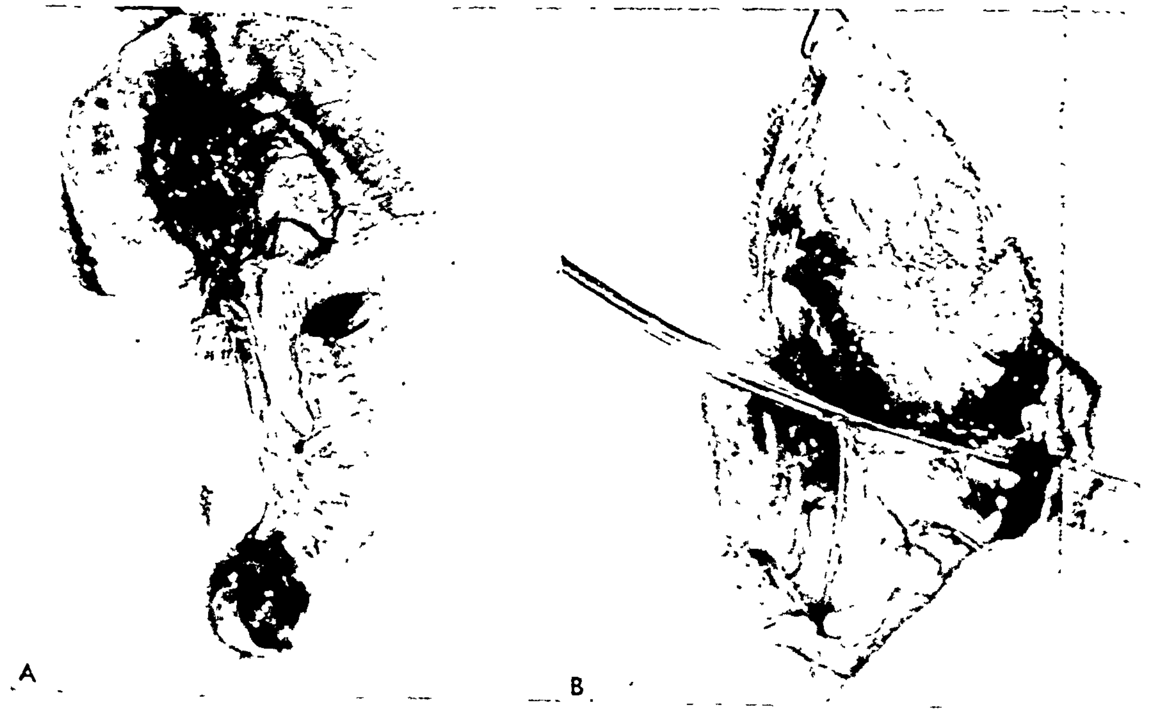

Fig. 2.—*A*, resected ileum and end-to-end anastomosis. *B*, total cystectomy.

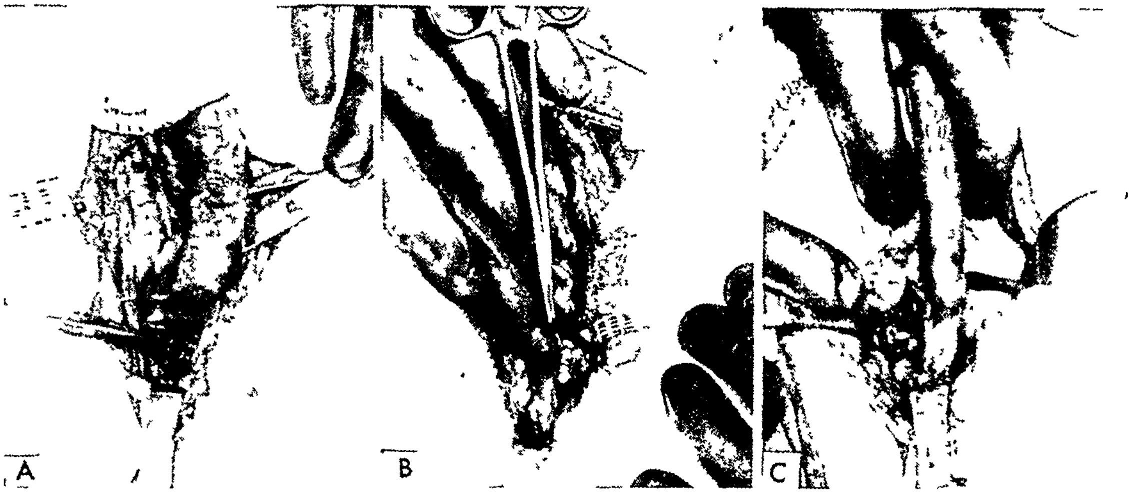

Fig. 3.—*A* and *B*, ileourethral anastomoses. *C*, completed ileourethral anastomosis.

No food was given for three days.

Studies of the blood were made either forty-eight or seventy-two hours, and intravenous pyelograms were performed seven to ten days, after the operation.

In 1 case ureteral catheters were passed up the ureters to the renal pelves through the urethra and the ileal bladder. The ends were cut close to the meatus, so that they could not be pulled out. In this 1 case, urination functioned for twenty-four hours and then the catheters fell out.

Results.—On the whole, our results were not good. It may have been our faulty technic, the condition of the dogs or our inexperience, but more probably it was inability to handle complications in a dog. It is quite possible that our use of the blind loop was not as good as the procedure in which an open loop of ileum is employed. In our experimental work where we used the blind loop of ileum in 10 operations, only 2 dogs lived and 8 died, a mortality of 80 per cent. In the results obtained by Giertz and Franksson in the 18 clinical cases in which they employed the open loop of ileum for a bladder anastomosed to the urethra, there was a mortality rate of only 27.7 per cent. To summarize our results of experimental ileourethroplasty in dogs, the facts are as follows:

Eight dogs died; and 2 are living at the time of writing.

The eight dogs died eleven, twenty-two, seven, nine, two, twelve, and seven days, respectively, after the operation. There was 1 anesthetic death.

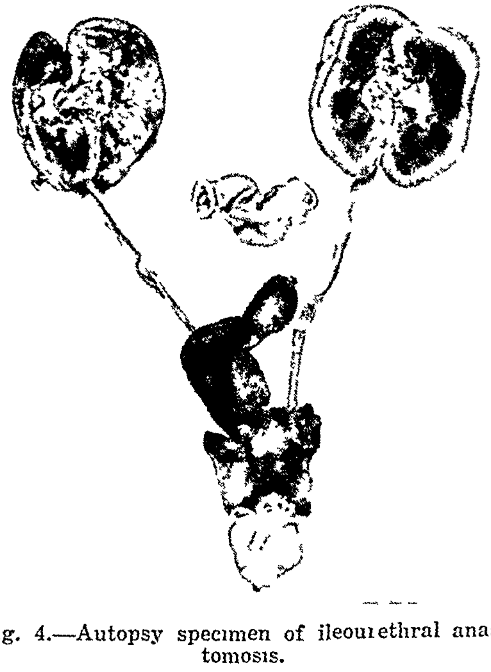

Fig. 4.—Autopsy specimen of ileourethral anastomosis.

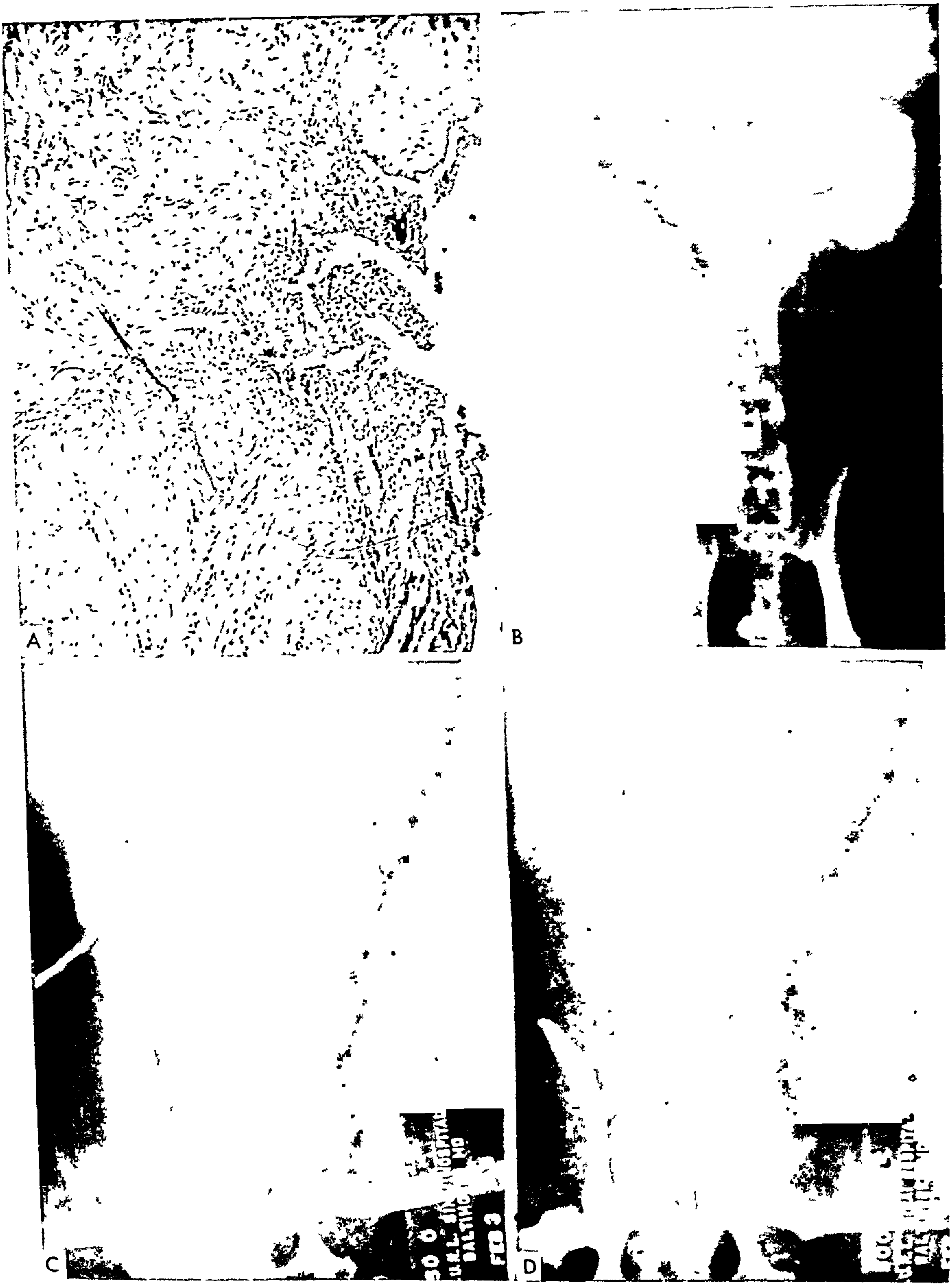

Fig 5.—*A*, photomicrograph of ileourethral anastomosis. *B*, preoperative intravenous pyelogram *C*, postoperative cystogram of ileourethral anastomosis *D*, postoperative urethrocystogram

esempio in relazione al drenaggio postoperatorio dell'urina, onde evitare idronefrosi e uremia. Vi sono gravi complicazioni ed è necessario mettere a punto una tecnica per controllarle. I risultati, nell'uomo, dipenderanno dall'abilità del chirurgo nel prevenire le complicanze o nel combatterle.

I risultati immediati, ottenuti nel cane sostituendo la vescica con un'ansa sigmoide anastomizzata all'uretra, sono stati migliori e si sono avute complicazioni in minor numero che non con le anse ileali.

RESUMEN

El autor da cuenta de un trabajo experimental en el que sustítuye la vejiga de un perro por un asa intestinal anastomosada a la uretŕa. Los resultados demuestran una perfecta continuidad del paso intestinal así como de la anastomosis ileouretral que permite el paso normal de la orina con una perfecta continencia en la mayor parte de los casos.

La operación parece pues factible pero es preciso mejorarla especialmente en relación con la evacuación urinaria postoperatoria que puede ser causa de hidronefrosis y de uremia. Las complicaciones son grandes y debe mejorarse la técnica para evitarlas.

Los resultados en el hombre dependerán de la habilidad del cirujano tanto para evitar las complicaciones como para resolver los que se presenten.

Se consigue una vejiga funcionalmente buena sin problemas de absorción.

Parece ser que para los autores, los resultados en el perro han sido mejores con el sigma, como sustituto de la vejiga que con un asa intestinal ciega anastomosada a la uretra.

SUMARIO

Apresenta uma comunicação sobre a experiencia do uso de um substituto de bexiga construido n'um cachorro usando alça ileal anastomosada á uretra.

Observou perfeita continuidade intestinal e ileo-uretral e em muitos casos com perfeita continencia da urina.

A operação é factivel mas necessita de melhoramentos, isto e, com respeito a drena gem posoperatoria que pode ser causa de hidronefrose e mesmo uremia. Uma tecnica precisa ser empregada para combater as serias complicações no cão. Os resultados no homem dependem da habilidade cirurgica para prevenir e combater complicações. Pode-se obter uma bexiga funcionalmente boa sem problemas de absorção. O uso de sigmoide no cachorro mostrou melhores resultados com menor numero de complicações.

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Large Ureteral Calculi in a Completely Duplicated Ureter

JOSEPH S. SIDOTI, M.D., F.I.C.S. AND VINCENT J. VALIENTE, M.D.

STATEN ISLAND, NEW YORK

An unusual case is reported, in which large multiple calculi occurred in a completely duplicated ureter, the patient being a man aged 62. Both diagnosis and surgical treatment are discussed. Complete nephrectomy was performed, heminephrectomy with ureterectomy having been discarded because of the patient's advanced age and the risk of future atrophy and renal infection.

THE unusual occurrence of large ureteral calculi in a case of bilateral complete duplication of pelves and ureters is presented. The unusual feature involved the presence of six marble-sized stone shadows in the bony pelvis. This presented a diagnostic problem first and a therapeutic problem later.

REPORT OF CASES

C. S., a 62-year-old white man, was admitted to the hospital on May 19, 1957, for gross painless hematuria. Hematuria had occurred intermittently for two weeks. There were no symptoms of prostatism and no associated symptoms referable to the urinary tract. The past history revealed that the patient had passed many small calculi in the past twenty-five years. He estimated that he had passed ten or fifteen calculi without pain. One calculus became impacted at the tip of the penis, and the patient finally milked it through.

He had never sought medical advice concerning these calculi. No other medical or surgical history was obtainable.

Physical examination revealed the patient to be tall, muscular, well developed and in excellent health. He was in no acute distress. In general, no abnormal signs were discovered. The abdomen was normal to palpation. Rectal examination showed a Grade II soft enlargement of the prostate.

A flat roentgenogram of the abdomen showed the aforementioned chain of stone shadows (Fig. 1) in the bony pelvis. There were six of these, varying in size from 1.5 to 2 cm. in diameter. They appeared rounded and in chain formation on the right side of the pelvis, extending from the tip of the coccyx to the right sacroiliac synchondrosis. The radiologist reported them as "in the bowel."

Intravenous pyelographic study (Fig. 2, *left*) revealed excellent function and good delineation of both kidneys. Complete duplication of the ureter was noted on the left side, down to the bladder. On the right side the pyelogram was normal (Fig. 2, *right*), and only one ureter was visualized. The low position noted in the pyelogram, however, gave the impression of a possible bifid pelvis on the right side also. There was no evidence that the calculi were in the genitourinary tract. Again the radiologist reported a normal genitourinary system except for the complete duplication on the left.

An air contrast delineation of the bowel (Fig. 3) was recommended. This, when done, showed the stone shadows to be on the outside of the large bowel. At this point the impression was that the calculi, although unusually large and numerous, might be in a nonfunctioning and nonvisualized half of a duplicated right ureter.

To confirm the latter opinion, cystoscopic and retrograde pyelographic studies were attempted on two occasions. Both attempts were

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Submitted for publication Nov. 20, 1957.

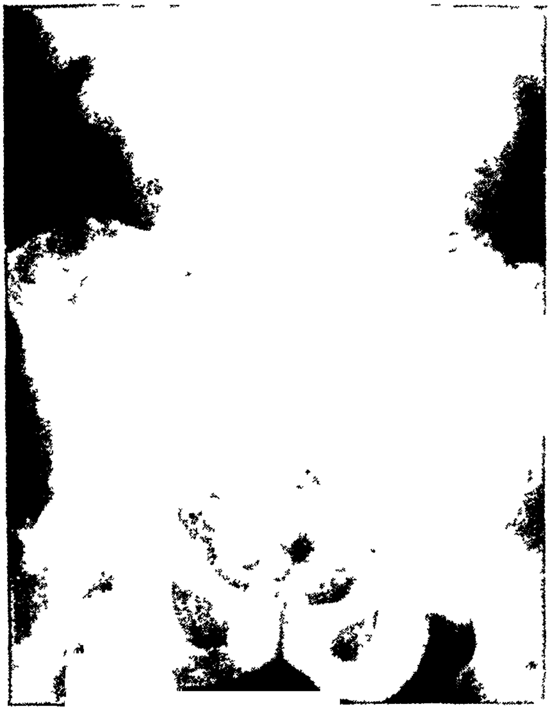

Fig. 1.—Plain roentgenogram of abdomen, showing chain of large stone shadows on right side of pelvis.

unsuccessful in entering the desired portion of the duplicated ureter. Although the upper segment was not demonstrated, the cystoscope revealed a mound or prominence in the region of the right ureteral orifice. This was interpreted as a dilated intramural segment of ureter.

On the strength of a bifid condition on the left, a strong suspicion of duplication on the right, the deformity in the right ureterovesical orifice, the hematuria and the history of having passed many calculi, a tentative diagnosis of large ureteral calculi in the *nonfunctioning* upper half of a completely duplicated ureter was made.

The next thing was to decide what to do. The calculi could probably be removed by a cystotomy and ureterotomy, but this would only leave a dilated and diseased ureter, with a poorly functioning kidney, susceptible to prolonged morbidity. A heminephrectomy with its accompanying ureterectomy would be ideal, but hardly in a man 62 years old, with the possibility of future atrophy and infection of the remaining portion of kidney. It was decided, therefore, to do a complete nephrectomy and to remove both ureters down to the bladder.

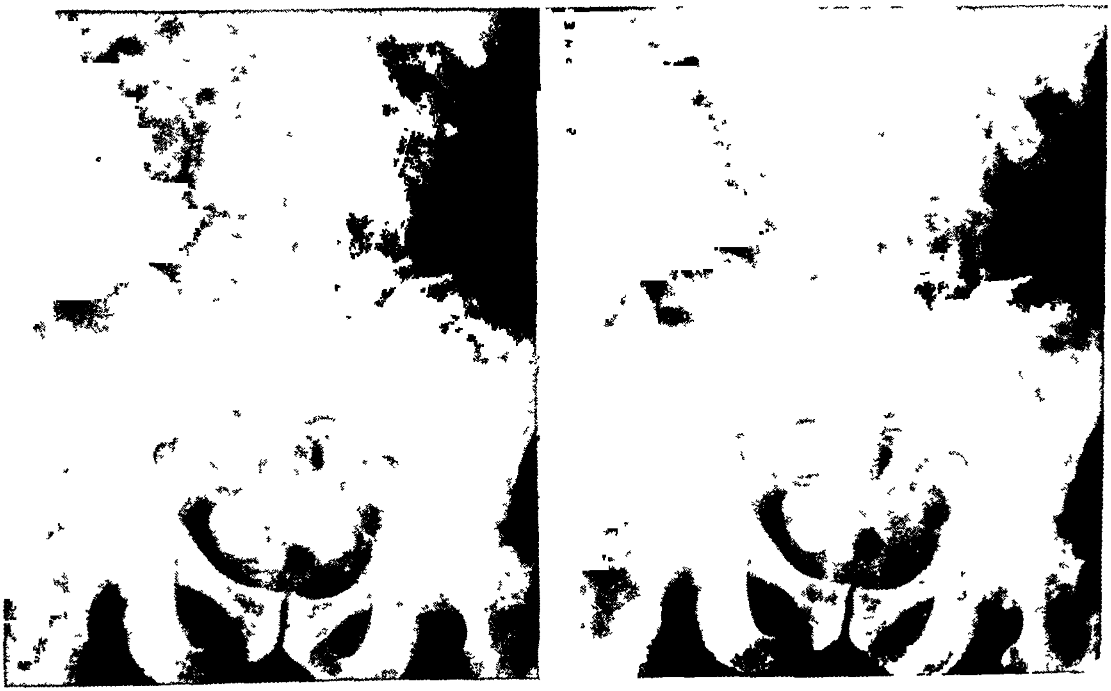

Fig 2.—Intravenous pyelograms showing complete duplication on left Chain of stone shadows does not appear to be in ureter. Only one ureter noted on right, but pyelogram appears to be in lower half of kidney

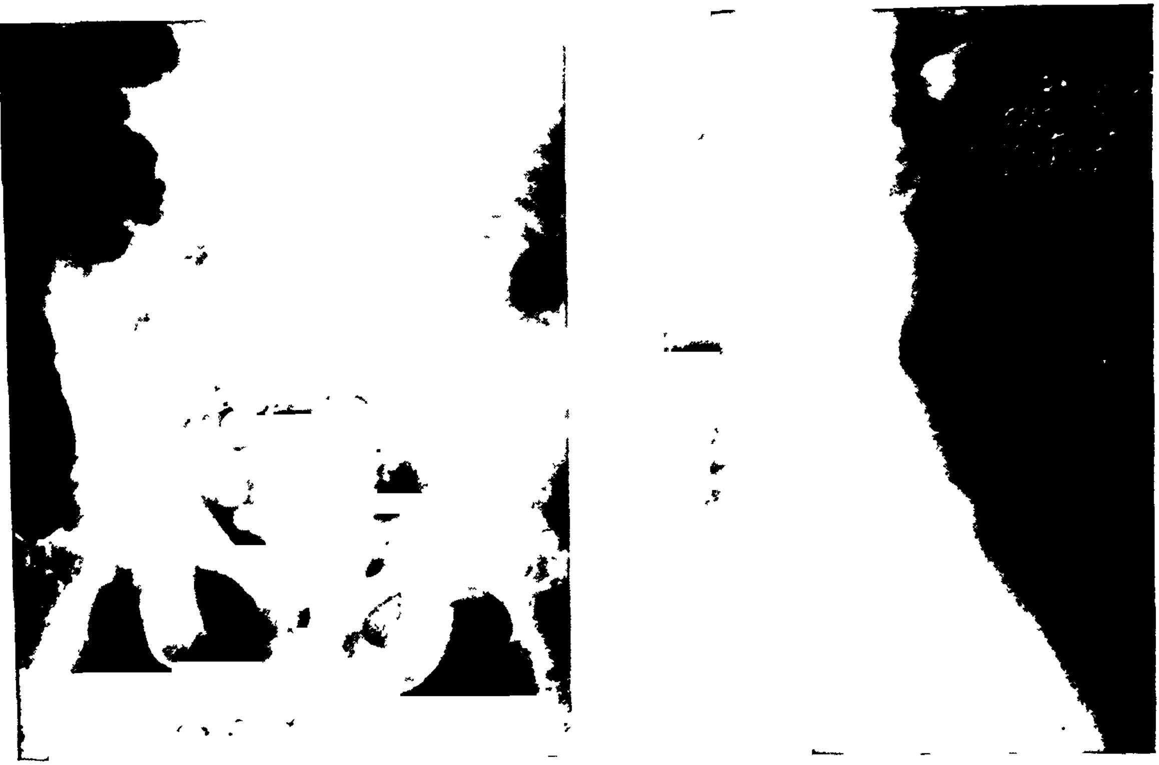

Fig. 3.—Air contrast study of bowel in anteroposterior and lateral position. Stone shadows are not in bowel.

Accordingly, on May 27, a right Gibson incision was made, the ureter was identified close to the bladder and the large calculi palpated within a greatly dilated ureter. Since only three calculi could be palpated in this dilated portion of ureter, the bladder had to be opened to locate the remaining three. When the bladder was opened the prominence noted cystoscopically could be seen in the right trigonal area. A small incision was made over this prominence, and four calculi were removed by "milking" them down the ureter and through the incision. The remaining two calculi were removed through a ureterotomy incision. A cystostomy was completed. The two ureters were doubly clamped at the bladder, cut and tied. The ureters were freed to the lumbar region. The incision was closed with the appropriate drains and cystotomy tube. The patient was placed on his left side, and an uneventful right nephrectomy was done.

The specimen (Fig. 4) revealed a fused double kidney with two pelves and two ureters, complete to the bladder. The upper half of the kidney showed hydronephrotic atrophy, and its ureter was greatly dilated and tortuous. The lower half of the kidney, as well as its ureter, was normal.

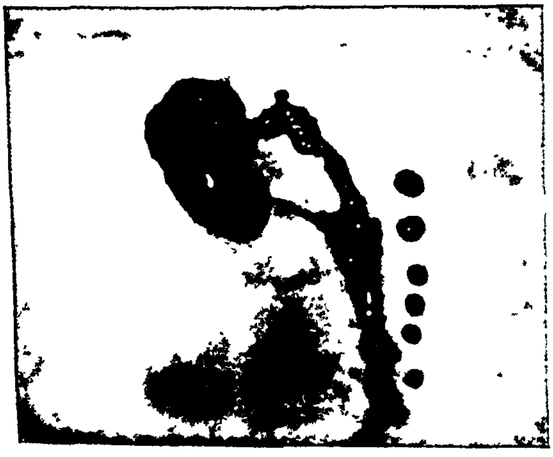

Fig. 4.—Pathologic specimen showing double ureter, with markedly dilated upper ureter. Six calculi removed from dilated ureter are also shown.

RESUMEN

El autor presenta un caso poco frecuente de cálculos grandes y múltiples en un ureter doble completo. Se hacen consideraciones sobre el problema diagnóstica y sobre la elección de las medidas terapéuticas.

RIASSUNTO

L'autore presenta un caso insolito di uretere duplice con grossi calcoli e discute il problema diagnostico e i metodi di cura.

RÉSUMÉ

L'auteur présente un cas rare de gros calculs multiples dans un uretère double complet et discute les problèmes de diagnotic et le choix des mesures thérapeutiques.

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The lay mind seems to find it unaccountably difficult to understand the professional attitude toward the unorthodox practitioner. We accept the view of Bacon that "The weakness and credulity of man is such as they will often prefer a mountebank or a witch to a physician." We do not deny to such practitioner the possession of a degree of competence in manipulative methods: we do not doubt either his sincere devotion to his task or his personal integrity. nor do we disparage the irresponsible gay confidence he has in his own very limited powers. We do not grudge him success though we recognise its extreme infrequency. and are not unfamiliar with its perilous accompaniments. its fatal disasters. Our opposition rests upon something more fundamental than this: upon his complete lack of training both in the most elementary principles which underlie all powers of diagnosis, and in the appropriate application of those principles to treatment. Such principles are not empirical, they are based upon a multitude of sciences. upon physiology. anatomy, pathology. radiology, and the like. and upon that trained clinical observation which seeks to determine not only the morbid local condition but also its correlation with the general state of the patient. It is only by such enquiry that an exact diagnosis can ever be made.

—*Moynihan*

Plastic and Reconstructive Surgery

Reconstruction of the Philtrum in Cases of Cleft Lip

GERALD BROWN O'CONNOR, M.D., F.A.C.S., F.I.C.S., AND
MAR W. McGREGOR, M.D.
SAN FRANCISCO, CALIFORNIA

A general discussion of the formation and functions of the philtrum and the cutaneous upsweep is presented and a new surgical approach to their formation is advocated. This has been used for single and double cleft lips which have already been subjected to operation.

The authors hope that, from their future investigations and additional creative ideas from fellow plastic surgeons, these surgical additions to the repair of cleft lip will lead, from a functional and cosmetic point of view, to the final goal, a normal lip.

THIS preliminary report is presented primarily to demonstrate an operative procedure designed for providing some definitive finishing touches to cleft lips. Secondarily, it is submitted to stimulate interest in the philtrum and the "cutaneous upsweep," as there is little information in the literature with regard to the anatomic or physiologic character of these two structures.

Reconstruction of cleft lips and their attendant deformities has progressed to such a fine degree of surgical artistry that the original defects are practically imperceptible. When the patient is seen early and the repairs are in the capable hands of an experienced plastic surgeon, all of the old stigmas of cleft lip abnormalities have been practically eliminated. Existing scars have become hairline and in many instances are cleverly placed for partial concealment and minimum interference with the normal growth of the lip. Lip repairs are well designed and executed to give a final result near the norm. The function of the lip has been revived; growth progresses normally, with a minimum of underlying bony deformity. The nasal readjustments give satisfactory cosmetic and functional end results, and nasal growth is normal and adequate.

Critical examination, however, by the discerning plastic surgeon reveals obvious anatomic differences that immediately single out the operatively treated cleft lip from the normal uncleft lip. The differences are: (1) the absence or lack of development of the normal philtrum in cases of cleft lip, either preoperatively or postoperatively, and (2) the absence, lack of development or alignment of the normal prominence in the skin of the upper lip just above the juncture at the vermilion border. This has been called the mucocutaneous ridge, the "white line," or the "white roll" (Gillies[1]), but to identify it

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From the Saint Francis Memorial Hospital Plastic and Reconstructive Center, San Francisco, California.
Submitted for publication Nov. 10, [illegible]

anatomically and architecturally we shall call it the "cutaneous upsweep" of the upper lip. With either unilateral and bilateral cleft lips the philtrum is poorly developed or lacking. In most cases, critical examination of the repaired cleft lip reveals that the philtrum is nonexistent. Its absence is accentuated in the presence of double cleft lip by the prominence of the prolabium and the presence of the flattened surgical juncture scars on either side of the prolabium.

According to the recent work of Marcks[2] and Trevaskis,[3] the structure we call the cutaneous upsweep is present in all cases of single or bilateral cleft lip. They claim that, although it has been recognized, it has not been utilized *per se* in the reconstruction of the newly formed lip. They have cleverly designated certain outstanding landmarks which, when brought into apposition, reestablish the cutaneous upsweep into a natural "cupid's bow." By utilizing the established surgical planning (Tennison[4]) in combination with the designated cutaneous upsweep landmarks, they have made progress toward overall perfection of lip repair in this area. Normally the degree of development of the philtrum and upsweep is more pronounced in some persons than others and is more apparent and prominent in children than in middle-aged or older persons. In a child the upper lip is pouting and thrown forward, because the development of the maxilla has proceeded faster than that of the mandible. Where it exists, this necessarily holds the lip up and out like a curtain. The position of the upper lip on the face depends

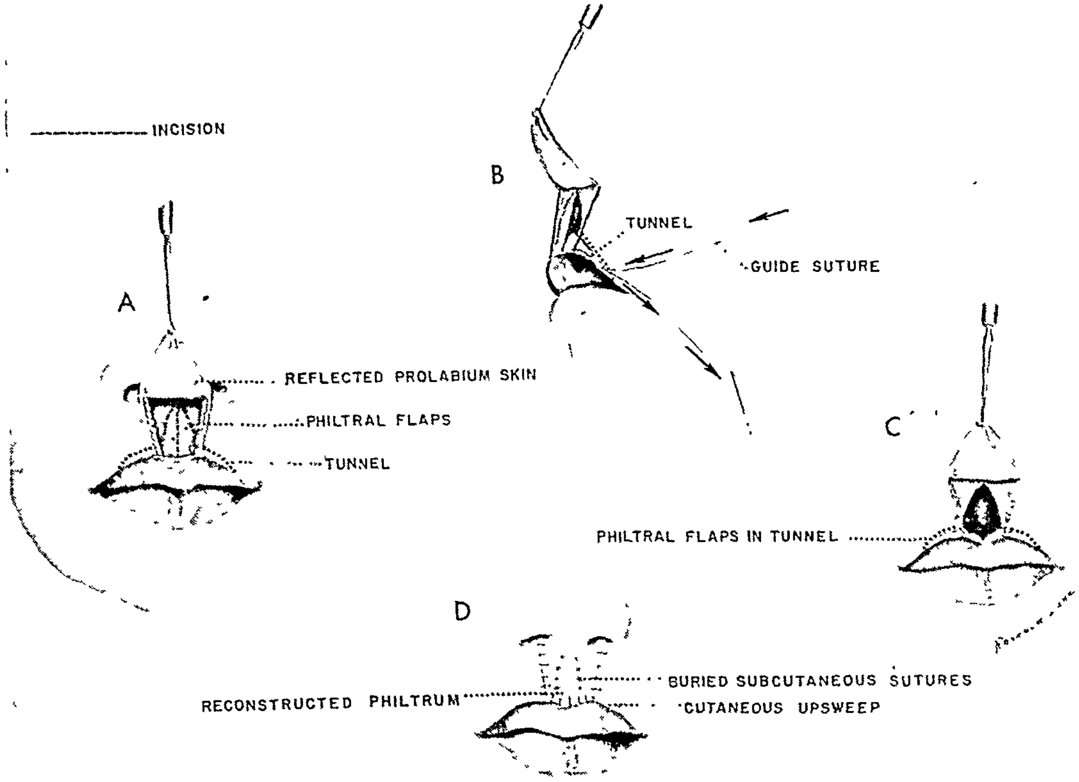

Fig. 1 (see text).

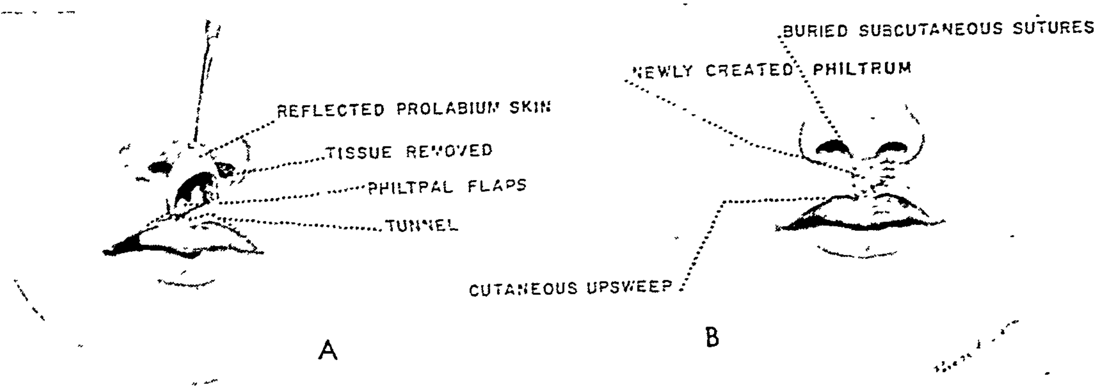

Fig. 2 (see text).

on the way in which it is hung on the maxilla.

In our opinion the lateral prominences of the philtrum and the cutaneous upsweep represent a thickening of the subcutaneous tissue in these areas. There is some elongation of the skin itself, so these areas are like a reverse fold. To theorize, the philtrum, besides being the juncture point of the two medial nasal processes, has elevated sidewalls to permit nasal secretions to run down either side of the upper lip, and the cutaneous upsweep acts like a gutter for perspiration or nasal secretions, to drain them away from the oral cavity, in somewhat the same way that vibrissae in the nose act as strainers and the eyebrows and eyelashes keep normal cutaneous secretions and external foreign bodies from the eyes. The philtrum and cutaneous upsweep are also so constructed, in our opinion, as to permit the many and varied motions of the lips in all directions, supplying a little extra material when play is needed in the upper lip. The lip then does not appear tight but will have some redundant material that can be utilized when needed, in a springlike action in which the upper lip is brought out to its fullest extent of motion and then back to normal. The excess material of the philtrum lies in a reverse folded position, so to speak, when the lip is not moving, to act as a ready reserve for all complicated lip motions and yet spring back to the norm when the lip is at rest.

In some instances of single or double cleft lip the philtrum seems to be partially present, but it is possible that at the time of operation certain areas were cut across and this philtrum relation is disturbed, or when the lip is reconstructed it is so tight that the philtrum itself is made smooth by continuous lateral shortening of the upper lip. The cutaneous upsweep is present in cases of cleft lip, but its anatomic presence has not been sufficiently utilized. Many of the surgical procedures recommended for reconstruction of the lip have entirely ignored the existence of a philtrum or a cutaneous upsweep, so that these areas have been cut across, replaced by scar tissue and not properly brought into the picture of overall lip repair. The absence of the normal philtrum and the cutaneous upsweep in the final repair is thus too obvious. It would seem to us that basically, to obtain a good repair, the lateral segments of the lips must be freely mobilized and replaced so that they are attached to the underlying maxilla in a manner more nearly normal; then one can proceed with the lip repair. Final adjustments of the operative scar of the lip can be made more easily at a later date, when the alveolar arch and premaxilla come into normal alignment.

In reporting some of the surgical work in this direction that we have been doing for the past five years, it must be said that our efforts are still in the formative stage. Most of our work has been directed primarily toward the formation of the philtrum and cutaneous upsweep in single and bilateral cleft lips that have been surgically treated in the past. It is our hope that we shall be able to incorporate some of our observations with regard to the philtrum and cutaneous upsweep into primary repair of single and bilateral cleft lips. *In secondary repair of the double* cleft lip, when the philtrum and the cutaneous upsweep are absent, the external lip scars are excised superficially, a small mound of scar being left underneath. This dermocicatrix will be used as a unipedicle, bipedicle or attached graft rotated into position to assist in the formation of the normal philtral borders. The skin of the prolabium is elevated. A section of subcutaneous tissue and scar is incised superiorly and laterally in the philtral area and turned down as a flap. This is about 4 to 5 mm. thick. This flap is dissected downward to the vermilion border where the normal low point of the cupid's bow would be and is then split in half (Fig. 1*A*). A tunnel is made under the skin in both halves of the upper lip where the cutaneous upsweep would normally be. The cicatrix type-grafts, being attached in the midline, are then threaded into the prepared tunnels and fixed (Fig. 1, *B* and *C*). The prolabium skin flap is then sutured into its bed with silk sutures passing through the mucosa of the upper lip, catching the prolabial flap subcutaneously and being tied on the undersurface of the upper lip. This eliminates the central dead space and indents the prolabial skin to form the new philtrum without external suture marks: occasionally we have tied an external central bolster into the new philtrum with through-and-through silk sutures to exert additional external pressure and accentuate the new philtrum. The skin of the prolabium is then brought down into position and tailored into the cupid's bow effect (Fig. 1*D*).

In the secondary repair of the single cleft lip the skin of the prolabium is elevated in the philtrum area. The subcutaneous and cicatricial flap is brought down in the same manner as in the double lip philtral formation. The excess material is discarded, and the subcutaneous and cicatricial grafts are placed in the cutaneous upsweep tunnels as they are needed. The philtral sutures are the same, and closure of the skin and total lip repair are done in the usual manner of Le Mesurier[5] and Tennison[4] or by other standard technics. This operative procedure forms the philtrum and rebuilds the cutaneous upsweep at one maneuver (Fig. 2, *A* and *B*).

In primary repair of a single lip the addition of the philtral excision to the accepted lip repair actually creates a central lip depression to simulate the normal philtrum. The excised philtral material may then either be discarded or used, as attached or free grafts, for subcutaneous filling where needed. Some of this excess material may be utilized at the scar juncture points.

We suggest that in primary double lip repair the philtrum be formed in the same manner, by excising the prolabial central prominence and then utilizing the vermilion cutaneous upsweep landmarks, as described by Marcks[2] and Trevaskis,[3] plus the accepted double lip surgical planning to complete the final lip closure.

SUMARIO

Apresentam uma discussão sobre a formação e função do filtrum e da dobra

cutanea superior assim como uma nova via de acesso para sua formação. Essa técnica foi usada para os fissuras unilaterais e bilaterais que já tinham sido operadas. Os AA. tem esperança que, no futuro de suas investigações á respeito, com a contribuição de novas ideias de outros colegas, possam chegar a obter uma correção estitica e funcional com semelhança de um labio normal.

ZUSAMMENFASSUNG

Nach einer allgemeinen Erörterung der Bildung und der Funktion des Lippenphiltrums und der Aufwärtskrümmung der Lippenhaut schlagen die Verfasser einen neuen chirurgischen Zugangsweg zur plastischen Herstellung dieser Gebilde vor. Ihr Verfahren ist zur Behandlung von Hasenscharten einer und beider Lippen, an denen schon vorher operative Eingriffe vorgenommen waren, angewendet worden.

Die Verfasser hoffen, dass ihre weiteren Untersuchungen und zusätzliche konstruktive Vorschläge anderer Kollegen aus der plastischen Chirurgie zu dem in der Reparatur der Hasenscharte angestrebten funktionellen und kosmetischen Ziel, der Wiederherstellung einer normalen Lippe, führen werden.

RESUMEN

Se presenta un trabajo que trata detenidamente la formación regular del surco mesolabial y la capacidad de succión así como del procedimiento operativo en casos de hendidura labial simple o doble.

Los autores confían que que, de las investigaciones futuras y de las ideas creadoras de los cirujanos plásticos pueda llegarse facilmente a obtener los mejores resultados desde el punto de vista estético y funcional; es decir, a un labio prácticamente normal.

RÉSUMÉ

Les auteurs présentent une discussion sur la formation et les fonctions du sillon médian sous-nasal et recommandent une voie d'approche chirurgicale utilisée avec succès dans les cas de becs-de-lièvre simples ou doubles ayant déjà étét opérés antérieurement.

Les auteurs souhaitent que la poursuite de leurs recherches personnelles et l'apport des spécialistes de chirurgie plastique permettront d'atteindre le but recherché, soit d'obtenir dans ces cas une lèvre normale aussi bien du point de vue fonctionnel qu'esthétique.

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Section en Francais

L'Osteosynthese du Tibia par Coapteur

(Osteosynthesis of the Tibia by Means of a Coaptor)

ALBERT DUCHENE, M.D., F.I.C.S.*
ANS-LIEGE, BELGIUM

A. INTRODUCTION. — J'écourterai volontairement ma communication pour me permettre de vous présenter un film sur l'ostéosynthèse du tibia par coapteur.

Ce film a été pris hâtivement à votre intention et est forcément imparfait. Il démontre néanmoins l'essentiel: la réalisation de la coaptation et de la compression interfragmentaire.

Comme tous les chirurgiens nous avons appliqué aux fractures du tibia, la gamme variée des traitements classiques: le traitement orthopédique, le plus souvent; des ostéosynthèses mineures spécialement des vissages et enfin des ostéosynthèses robustes par plaques, clous et coapteurs.

Ces dernières années, nous nous sommes intéressé spécialement à l'ostéosynthèse par coapteur et nous avons réalisé plus de 200 ostéosynthèses sur les divers segments osseux dont une bonne cinquantaine au tibia.

B. *Caractéristiques de l'ostéosynthèse avec compression.*—L'ostéosynthèse avec compression réalise les trois caractéristiques suivantes: le montage robuste, la coaptation parfaite et la compression interfragmentaire.

1. *Le montage robuste* libère le blessé de la servitude du plâtre et lui permet une évolution post-traumatique confortable par une mobilisation immédiate des muscles et des articulations. Il prévient l'atrophie et les raideurs, séquelles orthopédiques fréquentes, dont la récupération complète par un traitement physiothérapique correct, est toujours aléatoire. Car les séquelles cliniques de l'immobilisation ont un substratum anatomique et histologique bien démontré par les expérimentateurs. Des auteurs italiens Scaglietti, Molfeto, Mastromarino, Maiotti, etc., ont étudié les altérations histologiques survenues à la tibio-tarsienne du chien, à la patte postérieure du lapin après immobilisation. Ils ont observé qu'après 5 jours déjà chez le lapin—et les lésions s'aggravent au fur et à mesure—il existait une réaction oedémateuse au niveau des parties molles périarticulaires, une atrophie diffuse du membre, une hyperémie congestive de la synoviale, plus tard une réaction réticulohistiocytaire de la synoviale, des dépôts hématiques et fibrineux dans l'articulation, des érosions du cartillage articulaire. A la levée de l'immobilisation, et ceci confirme les constatations cliniques humaines—l'oedème réapparaît tandis que la raideur articulaire s'aggrave pour un temps. Après un certai délai se produit une régression progressive des altérations mais la cicatrisation fibreuse de la synoviale et des lésions cartilagineuses laissent des traces irréversibles influencant

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*Chef du Service de Chirurgie a l'Hopital Militaire de Liege.

Sujet presente au Week-end Chirurgical de Liege du College international de Chirurgiens, les 6 et 7 avril 1957.

Submitted for publication May 22, 1958.

définitivement la fonction. Un autre méfait de l'immobilisation est l'ostéoporose métaphysaire et tarsienne que nous n'observons pas chez nos opérés précoces immédiatement mobilisés, à quelque moment que ce soit et nous avons vu évoluer des pseudarthroses du foyer fracturaire mobilisées sans aucune décalcification sous-jacente. L'ostéoporose post-traumatique à son degré radiologique n'est pour nous qu'une ostéoporose d'immobilisation (radio n°8).

2. *La coaptation parfaite* est nécessaire du point de vue technique pour réaliser la compression. Elle n'est pas indispensable en soi. Le traitement orthopédique peut donner d'excellents résultats en dépit d'une réduction certes équilibrée mais bien imparfaite du point de vue anatomique. C'est pourquoi nous renonçons à l'ostéosynthèse mineure, ayant comme visée exclusive de parfaire une réduction qu'il faut étayer par appareil plâtré. Dans l'ostéosynthèse avec compression les corticales doivent se juxtaposer anatomiquement pour permettre un contact intime et une impaction au niveau du tissu spongieux.

3. *La compression interfragmentaire* ou axiale a été bien étudiée par Danis qui a attiré notre attention sur son influence favorable et a pu conclure de son expérience que le contact intime et la compression sont des facteurs de consolidation. Du reste, il est d'observation clinique constante *qu'un diastasis interfragmentaire,* orthopédique par traction excessive, ou opératoire par coaptation non satisfaisante, est facteur de retard de consolidation ou de pseudarthrose. Que d'autre part, une *fracture engrenée* consolide toujours très rapidement et qu'il nous coûte de devoir la désengrener pour parfaire une réduction.

Certes, l'engrènement traumatique n'est pas exactement comparable à la compression opératoire. Dans le 1er cas la corticale d'un des fragments vient s'emboutir dans le tissu spongieux de l'autre. Dans le 2ème cas les corticales se font vis-à-vis et il n'y a d'engrènement qu'au niveau des spicules de tissus spongieux, engrènement, interpénétration cependant réel.

Fig. 1.—J. ......, Georges. Ostéolyse face interne du tibia. 3 mois et demi après l'ostéosynthèse.

D'autre part, nous connaissons depuis Delbet l'action favorable des appareils de marche et de l'appui.

Quand nous enclouons un col fémoral nous n'omettons jamais de marteler le grand trochanter pour obtenir l'impaction.

Si nous envisageons les résultats de l'enclouage centro-médulaire il est remarquable de constater la constance des résultats au niveau du fémur ou s'exerce la compression par le poids du corps lors de la marche, et l'inconstance des résultats au niveau de l'humérus. Nous avons eu nous même et observé ailleurs des cas de pseudarthroses d'humérus pourtant correctement encloués.

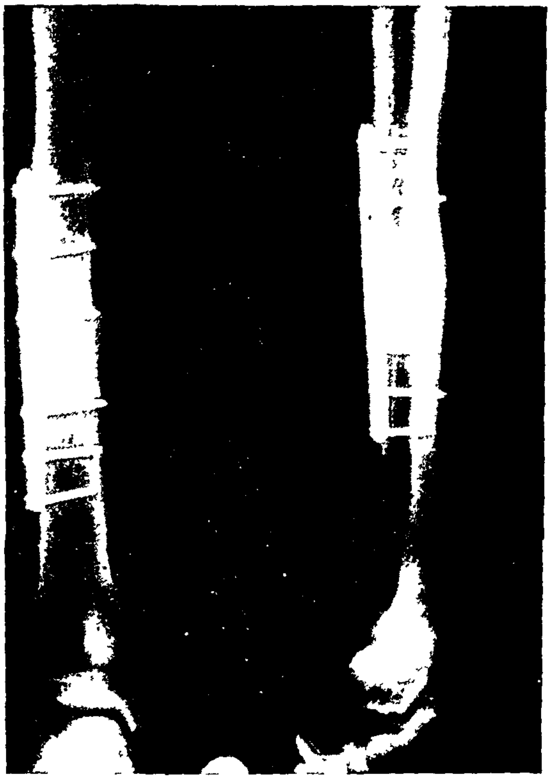

Fig. 2.—J . ..., Georges. Même cas après 8 mois—L'appui a été interrompu. L'ostéolyse a complètement disparu et le cal se présente presque comme un cal primaire.

Enfin les expériences d'Eggers nous fournissent en quelque sorte une preuve de laboratoire sur l'effet de la compression.

En découpant sur un crâne de rat trois côtés d'un carré et en exercant à l'extrémité libre du volet une compression volontairement excessive Eggers constate qu'à ce niveau il y a ostéolyse, qu'à mi-distance il y a consolidation et qu'à l'extrémité fixe où il n'ya pas de contact, il n'ya aucun phénomène ostégénique.

Ceci démontre l'influence de la compression et son influence favorable ou défavorable sur la consolidation. En pratique on peut admettre que la pression exercée par la compression opératoire ne dépasse pas le poids du corps et ne provoque jamais d'ostéolyse à l'endroit de compression maximale.

C. *Indications de l'ostéosynthèse par coapteur.*—Je tiens à signaler que la méthode ne s'adresse pas aux fractures les plus complexes ni aux fractures proches des épiphyses au delà des 2/4 moyens. Une première indication est fournie par les fractures isolées du tibia avec glissement d'un fragment et léger diastosis, fracture isolée sans lésion ni subluxation du péroné, dont nous savons la lente consolidation.

C'est pour ce type de fracture que certains auteurs ont préconisé l'ostéotomie du péroné. La consolidation avec le coapteur a toujours été obtenue dans les délais normaux et trés confortablement pour le blessé.

Une deuxième indication est constituée par les fractures transversales ou légèrement obliques.

Une troisième indication comprend les fractures avec un troisième fragment cunéiforme mais ici, le montage est d'autant moins robuste que le fragment est plus volumineux et l'appui doit être retardé. Après quelques ennuis nous sommes arrivés à la conception qu'il faut soumettre ces cas à la double ostéosynthèse.

D. *Contre indications.*—Il est une contre indication commune à tous les modes de traitement opératoire c'est l'état suspect du revêtement cutané, soit ouverture du foyer, soit dévitalisation.

Notre opinion est sévère sur l'intervention urgente des fractures ouvertes et nous estimons que toute solution de continuité cutanée en rapport avec le foyer fracturaire est une contre indication formelle au traitement opératoire *primaire.* Il faut attendre et avoir acquis la conviction que la cicatrisation s'est faite d'une façon strictement aseptique. En cas de suintement louche ou purulent, il est sage de renoncer à l'intervention et de pratiquer le traitement orthopédique. Un délai de 3 mois nous paraît nécessaire à partir de la cicatrisation pour entreprendre une ostéosynthèse secondaire à un échec orthopédique.

Il faut encore se méfier du revêtement contus par une force extérieure ou comprimé de dedans en dehors par le chevauchement des fragments ou un hématome sous-jacent sous tension et n'intervenir que s'il n'y a plus de risque de sphacèle.

C'est pour éviter le dommage cutané, que la fracture du tibia, sans préjuger du traitement ultérieur, doit être soumise d'urgence à l'extension continue qui réduit le chevauchement en même temps que la contraction musculaire et l'infiltration cutanée.

Les contre indications d'ordre mécanique propres à l'ostéosynthèse par plaque coaptrice comprennent:

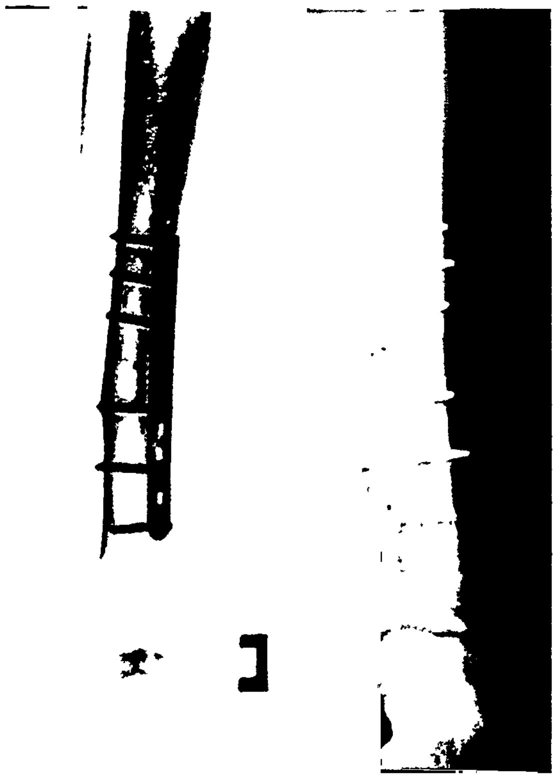

Fig. 3.—L , Jean. 6 mois après l'ostéosynthèse. Véritable cal primaire. La corticale est reconstituée anatomiquement de même que le canal médullaire est absolument libre.

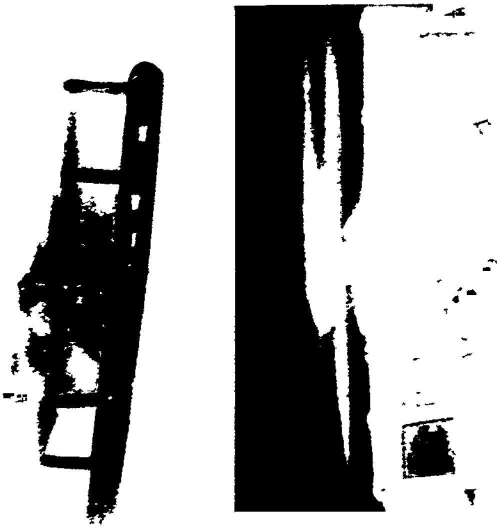

Fig. 4.—Mar......., Jean. 5 mois après ostéosynthèse parfaite. Grosse ostéolyse de la face interne.

a. Les fractures des ¼ super et inférieur où la corticale très amincie ne peut constituer un support suffisamment robuste au vissage.

b. Les fractures obliques longues ou spiroïdes à considérer comme des fractures selon le grand axe où la présence d'une plaque ne joue aucun rôle mécanique.

c. Les fractures comminutives multifragmentaires, et

d. Les fractures étagées ou segmentaires.

E. *Résultats.*—Sur 52 cas nous avons à déplorer une infection grave ayant évolué vers la pseudarthrose infectée qui n'a pu être "rattrapée" et a conduit à l'amputation. Il s'agissait d'une fracture légèrement ouverte infectée, opérée quinze jours après cicatrisation, délai trop court.

Un 2ème cas, ayant subi une ostéosynthèse par plaque sur la face interne, aprésenté au décours du troisième mois, une suppuration amicrobienne qui s'est asséchée dès l'ablation de la prothèse, mais la consolidation n'était pas apparente trois mois après. Un greffon in lay a permis la guérison Durée du traitement total: 12 mois.

Les 50 cas restants, dont l'évolution a été strictement aseptique doivent être divisés en deux groupes: un groupe de 35 cas dont la consolidation a été obtenue sans incidents en 135 jours de moyenne. Il nous a été difficile dans les *cas de cal primaire* (radio n°3) de déterminer exactement le moment de la consolidation. Un groupe de 15 cas dont l'évolution a été retardée par un incident qui nous a beaucoup préoccupé et dont la cause nous a échappé un certain temps. Il s'agit d'une réaction inflammatoire localisée a la face interne sous cutanée du tibia qui, habituelle dans le postopératoire immédiat pour évoluer vers l'extinction, augmente au fur et à mesure de l'appui et se manifeste radiologiquement au cours du 3^{eme} mois, par une image de remaniement osseux avec ostéolyse et ostéoformation. La corticale de la face interne se dilue tout en s'élargissant, la fonte parcourt l'espace interfragmentaire où apparaît un hiatus, invisible des après l'ostéosynthèse et gagne finalement la corticale opposée. Il y a pseudarthrose avec élargissement des surfaces, qui provoquera une angulation en antécurvatum après flexion ou cassure de la plaque. Ceci se passe chez les opérés continuant à marcher (radios 4 et 5). La plaque a dans ce cas été enlevée, la correction nécessaire effectuée et une immobilisation stricte dans un plâtre mouléa permis l'obtention d'une consolidation relativement rapide 3 mois. Si l'on prescrit le repos, dès l'apparition de cette ostéolyse,

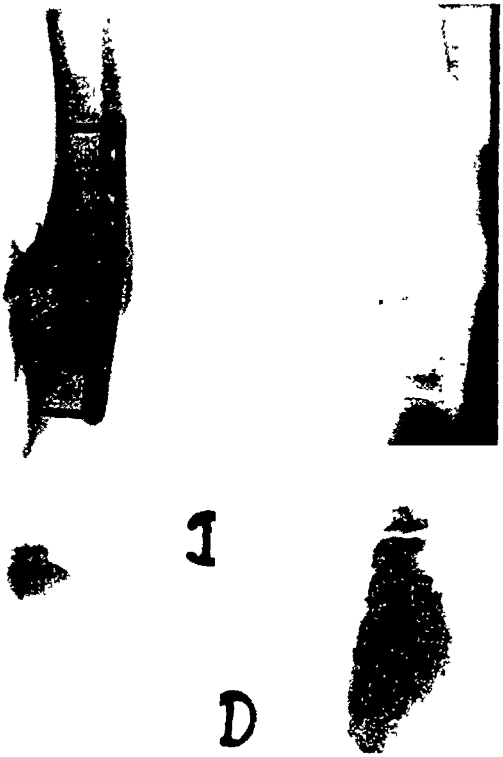

Fig. 5.—Mar , Jean. Même cas après 11 mois. Le malade a continué a marcher et l'ostéolyse a évolué vers la pseudarthrose. Fracture de la plaque.

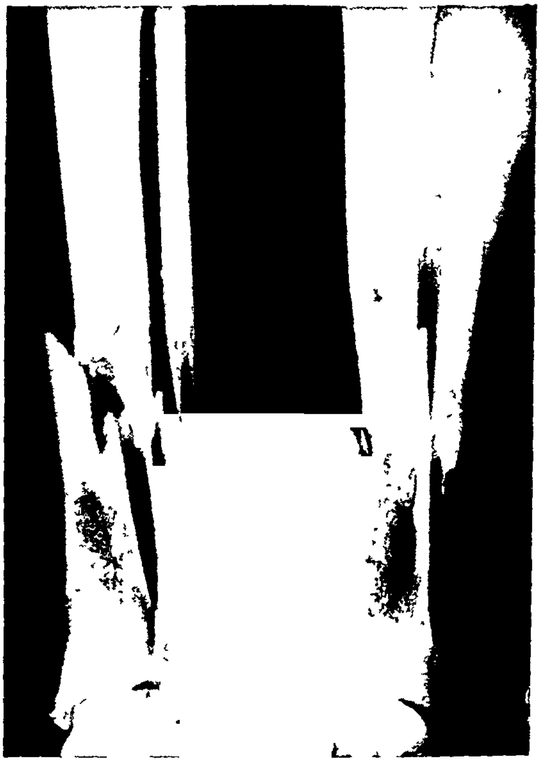

Fig. 6.—Schou ....., Pierre. Fracture avec gros 3^{eme} fragment cuéiforme encore adhérent au fragment supérieur.

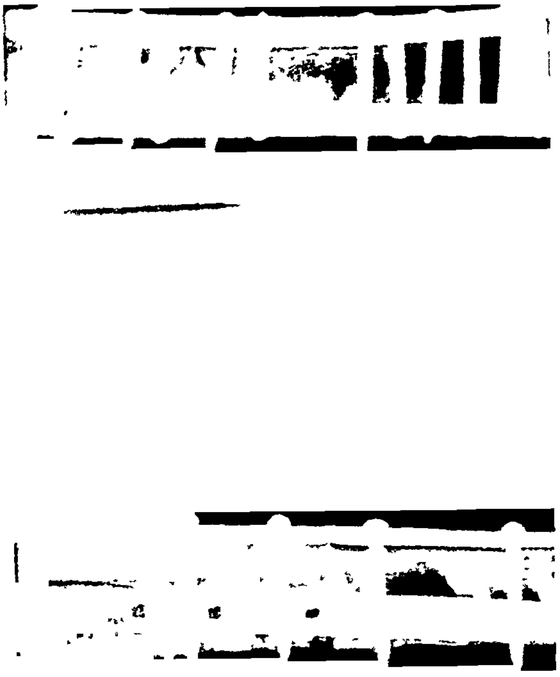

Fig. 7.—Schou. ......, Pierre. Même cas que 6. Double ostéosynthèse par coapteur aux faces interne et externe.

le processus s'éteint et la consolidation s'obtient avec un cal périostique parfois exubérant (radios Jans 1 et 2). Quelle est la signification de ce processus?

On peut éliminer l'infection puisque l'évolution a été aseptique dans tous les cas sauf un, de même que l'intolérance au matériel puisque l'évolution débute et reste longtemps localisée à la face interne, alors que la plaque est fixée sur la face extrene. Et les plaques enlevées, n'ont pas présenté de signe d'oxydation. Il ne parait pas qu'il faille incriminer le décollement de la surface cutanée comprenant ou non le périoste car le processus apparaîtrait constamment et non dans ¼ des cas. L'absence de couverture musculaire doit néanmoins être retenue dans l'intensification des phénomènes vaso-moteurs.

On peut éliminer enfin la compression excessive, puisque c'est à la face interne la moins comprimée que débute la réaction. Nous avons acquis la conviction que c'est précisément la fixation insuffisante de la face interne qui amorce l'ostéolyse et la pseudarthrose dont l'élargissement des surfaces osseuses peut être considéré comme une tentative d'union, contrariée.

De ces considérations, découle le remède à apporter: Repos au lit dès l'apparition de la réaction osseuse. Mais le but de l'ostéosynthèse robuste qui est non seulement la mobilisation mais aussi l'appui est alors manqué.

Nous pratiquons actuellement la fixation simultanée de la face interne; fixation sommaire par une agrafe de Dujarier, dans

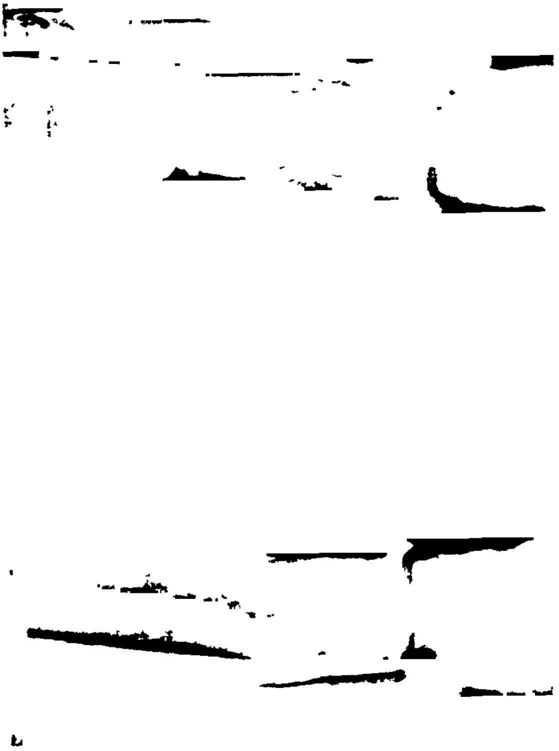

Fig. 8.—Schou , Pierre. Même cas. 24 jours après l'ostéosynthèse. L'intéressé marche. Il n'y aucune decalcification ni métaphysaire ni tarsienne. Ceci prouve que la décalcification post traumatique est exclusivement due à l'immobilisation.

les transversales; fixation par un deuxième coapteur dans les fractures obliques ou avec troisième fragment.

Les trois derniers cas ainsi traités ont évolué ambulatoirement vers une consolidation rapide (radios 6 et 7).

"The Sick Lady." Jan Steen. The artist shows us here that the mode of taking the pulse differed little in the seventeenth century from the modern way. The facial expressions, as usual, are remarkable in portraying concern and interest on the part of the physician and weariness on the part of the patient. *(Reproduced by courtesy of the Rijksmuseum, Amsterdam, The Netherlands)*

—Hamilton Bailey, F.R.C.S. (Eng.), F.A.C.S., F.R.S. (Edin.), F.I.C.S. (Hon.)

Editorial

Observations on the History of Physical Diagnosis: Hippocrates, Auenbrugger, Laennec

SAUL JARCHO, M.D.

NEW YORK CITY, NEW YORK

IN a presentation of the history of physical diagnosis as represented in the works of Hippocrates, Auenbrugger and Laennec one must therefore devote chief attention to these three major figures. Nevertheless, one cannot altogether ignore the many other physicians whose contributions provide continuity to the historical narrative.

For present purposes physical diagnosis will be defined, in the traditional way, as consisting of inspection, palpation, percussion and auscultation. The problem resolves itself into determining the condition of these technics at three points in time, but no discernible circumstances that may have influenced the general development of the entire diagnostic art can be neglected.

Hippocrates.—The Hippocratic writings are involved in a complex of textual and philologic problems that probably will never be solved. There have survived from antiquity almost seventy miscellaneous and anonymous treatises, which vary in style and merit and range in date from perhaps 450 to 350 B.C. or later. These could not have been the product of one man, or even of one school. It is generally believed that part of the collection represents the work or influence of the school of Cnidos,[1] which rivaled the Hippocratic school of Cos. Following the suggestion of W. H. S. Jones,[2] I shall assume that the corpus Hippocraticum represents the library of the Coan school and as such includes not only the writings of the master and his disciples but also a variety of case notes and memoranda, and a group of incidental writings which were prepared elsewhere but were perhaps consulted by members of the school or donated to them. Since we cannot be certain which treatises were written by Hippocrates or even which were written by members of his school, it is convenient to circumvent the problem of authorship by speaking of the Hippocratians collectively.[3]

It may be observed, incidentally, that only about a third of the Hippocratic collection is available in English, a fact that demonstrates our backwardness in medical scholarship.

Among the diseases that confronted the Hippocratic physician, the commonest appear to have been pneumonia and its complications, tuberculosis, malaria, miscellaneous noneruptive fevers, tetanus and the traumas of sport and war. Especially notable is the great frequency of pulmonary and pleural disease.

Since much of physical diagnosis is based on a knowledge of anatomy, one must inquire how much anatomical knowledge the Hippocratians possessed. From

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Presented in part as a lecture at the International Surgeons' Hall of Fame, International College of Surgeons, Chicago, March 4, 1958.

Submitted for publication Nov. 1, 1958.

During the forthcoming months of 1959 and as long thereafter as possible, the editorial pages of the Journal of the International College of Surgeons will be occupied by presentations of rare and extraordinary historic value, the lectures presented at the International Surgeons' Hall of Fame on medical and surgical history from the earliest recorded achievements to those of our own times. We believe that Journal readers who were not able to attend the lectures will find them as exciting as did the audiences present at their delivery. The story of progress in the healing arts and the giants of medicine and surgery to whom we owe the amazing brilliance and scope of modern achievement is intrinsically thrilling and is a vital part of the education of every cultivated man and woman, inside or outside the profession. It is altogether fitting that it should appear in these pages, since the International College of Surgeons is first, last and always a teaching institution.

the surgical treatises it is evident that they had extensive exact information about the human skeleton and were able to recognize and describe with precision the distortions of contour caused by fracture and dislocation. Indeed, the surgical writings are in some respects the best parts of the Hippocratic corpus and contain much that is useful today.

The Hippocratic knowledge of human visceral anatomy was meager and fanciful. The contrast between exact knowledge of the osseous system and ignorance of the viscera suggests that the Hippocratians may have had human skeletons available, presumably from graveyards, but relied on the dissection of animals for their knowledge of the internal organs. We may offer the uncharitable suspicion that even the dissection of animals was not carried out very diligently, since the venous system as the Hippocratians described it does not exist in any mammal.[4]

We must recognize, furthermore, that the modern concept of diagnosis was alien to Hippocratic thinking. The Hippocratians placed chief emphasis on what they called prognosis. This included not only the ability to forecast the outcome in a case of disease but the ability to recognize what had already happened, i.e., to understand the entire course of the illness.[5] The closest English equivalent to the Hippocratic prognosis would probably be the expression "natural history of disease."

The manner in which the Hippocratic physician approached his patient is given in the *Prognostic:*

"In acute diseases the physician must conduct his inquiries in the following way. First he must examine the face of the patient, and see whether it is like the faces of healthy people, and especially whether it is like its usual self. Such likeness will be the best sign, and the greatest unlikeness will be the most dangerous sign. The latter will be as follows. Nose sharp, eyes hollow, temples sunken, ears cold and contracted with their lobes turned outwards, the skin about the face hard and tense and parched, the color of the face as a whole being yellowish or dark . . . If the eyes shun the light, or weep involuntarily, or are distorted, or if one becomes less than the other, if the whites be red or livid or have dark veins in them, should rheum appear around the eyeballs, should they be restless or protruding or very sunken, or if the complexion of the whole face be changed—all these symptoms must be considered bad, in fact fatal."[6]

After this description of the face the Hippocratic author describes the posture and attitude of the patient lying in bed, the spontaneous movements of his limbs, his respiration, his abdomen and so forth. Visual observation is minute and accurate. Here is another brief example, taken from *Ancient Medicine:*

"If a man who has grown accustomed, and has found it beneficial, to take lunch, should miss taking it, he suffers, as soon as the lunch-hour is passed, from prostrating weakness, trembling and faintness. Hollowness of the eyes follows; urine becomes paler and hotter, and the mouth bitter; his bowels seem to hang; there come dizziness, depression and listlessness."[7]

If such descriptions as these are compared with the perfunctory statements that distend our hospital charts and clinical journals, the logical conclusion is that in the application of straightforward visual observation the profession has retrogressed since the time of Hippocrates. Modern case reports are altogether too full of the conventional "well-developed, poorly nourished white male," hastily examined and carelessly described. This comment is offered especially to those who believe that the history of medicine is a record of continual progress. The Hippocratians saw; modern physicians and surgeons often do not even look.

The Hippocratians inspected the orifices of the body and have left descriptions of diseases of the pharynx, palate, and uvula.[8] As the surgical treatises prove, they also used rectal speculums.

Their observation included not only the patient himself but his urine, feces, sputum and secretions. Valuable prognostic indications were gathered therefrom. For example, there are many mentions of the changes in the appearance of the sputum and of the urine during the course of pneumonia. Significant details of this type are often overlooked nowadays or replaced by routine laboratory analyses, or—even worse—by routine laboratory reports.

The Hippocratians palpated abscesses and tumors. There is no convincing evidence that they percussed the abdomen or the chest, but it is clear that they palpated the abdominal viscera and made note of the size and hardness of the liver and spleen.[9] They observed pulsations in various parts of the body but appear to have paid little attention to the pulse as a sign of health or disease.[10]

There are numerous references to auscultation. Thus, in a case of "false membranes" in the pleura:

". . . when the lung falls against the side of the chest, the patient has cough and orthopnea . . . and a noise like that of leather is heard."[11]

On "dropsy of the lung" (hydrothorax?):

"If dropsy forms in the lung, and if you apply your ear to the chest and listen a long time, a sound is heard within like that of vinegar . . .[12] The incision is made where the sound is heard."

There are many incidental references to thoracic and respiratory noises, but the modern reader is often left in doubt as to whether these were detected by listening at the patient's mouth or by immediate auscultation of the chest.[13]

The practice of succussion is mentioned repeatedly. Thus, in a case of empyema:

". . . shake the patient, while keeping your ear against the chest, in order to determine on which side the signs are . . . If, because of its thickness, the fluid does not fluctuate and no noise is made in the chest . . . do not let yourself be fooled, but know that the chest is full of pus."[14]

These passages make it evident that the ancient Greek physicians practiced auscultation. They knew the pleural friction sound. They *may* have heard rales. They used succussion when empyema was suspected, and they recognized that this test sometimes failed. As Laennec showed, succussion would not yield a positive result unless the pleural cavity contained air as well as fluid.

Unfortunately for those who would like to draw quick inferences, the passages that mention auscultation and succussion are taken mainly from such works as the treatise *On Diseases*, the treatise *On Internal Affections* and the second, fifth and seventh books of the *Epidemics*. These works are generally held to be Cnidian rather than Hippocratic. An additional thorn on the rose is the fact that the Cnidian treatises have not been translated into English; hence the American physician must consult the French translation of Littré or the German translation of Kapferer unless he insists on the pleasure of reading the Greek.

Whether any specific detail of medical technic should be attributed to the school of Cnidos or the school of Cos is beside the point. In the present state of scholarship one must take the Hippocratic writings as a whole, looking to the anonymous authors for their high level of bedside medicine, for accuracy and minuteness of observation, for recognition of constitutional factors in disease, for an appreciation of the relation between disease and its background and for their enunciation of principles of ethics. In this lies the merit of Hippocratic medicine.

From Hippocrates to Auenbrugger.—Between the composition of the Hippocratic treatises and the publication of Auenbrugger's book on percussion a period of approximately two thousand years elapsed. During this interval there were several general tendencies that ultimately led to the development of physical diagnosis. First and most fundamental was the development of anatomy by Vesalius and his successors during the sixteenth and later centuries. Second was the slow accumulation of clinical knowledge bequeathed by the Greeks and Arabs and amplified by Sydenham, Boerhaave, Van Swieten and a legion of others. The simultaneous availability of clinical and anatomic knowledge led to the development of clinicoanatomical correlation as seen in the writings of Benivieni, Bonet, Lancisi, Wepfer, Valsalva and Morgagni.[15] Physiology, too, had made great advances—witness the work of Harvey, Servetus, Sanctorius and Haller[16]—but these as yet had relatively little recognizable influence in clinical medicine, especially in the field of clinical diagnosis.

It is also worth noting that in Auenbrugger's time Hippocrates and Galen were still alive, in the sense that their writings were ordinarily read by physicians and students and their doctrines still received at least partial acceptance.

Despite great advances, in the eighteenth century as in the days of the ancient Greeks, the physician who attempted to discover what was wrong with his patient had at his disposal mainly the case history, the external appearance, the pulse and the appearance of the excretions. If he was an up-to-date eighteenth-century thinker he might attempt to predict the gross autopsy observations. He had virtually no way of ascertaining the exact location of an internal disease during the lifetime of the patient.[17] The entire concept of anatomical localization[18] is closely linked with the progress of physical diagnosis from Auenbrugger to Laennec to Roentgen.

Auenbrugger.—Leopold Auenbrugger (1722-1809), the son of an Austrian innkeeper, studied medicine in Vienna and ultimately joined the staff of the Spanish Hospital in that city. In addition to being a physician he was a gifted amateur of music and composed the libretto of an opera written by Mozart's enemy Antonio Salieri."[19]

After seven years of clinical trial supplemented by autopsies and by experiments on cadavers, Auenbrugger published his *New Discovery* (of percussion of the chest). Very significantly, this book appeared in 1761, which was also the year of publication of Morgagni's *De Sedibus*.

Auenbrugger's brief text is arranged as a series of fourteen Observations, divided into forty-eight Sections plus scholia, the arrangement reminding one of Euclidean propositions or Hippocratic aphorisms. The Observations deal successively with the normal percussion tone, the method of percussion, abnormal percussion tones, and the abnormal signs associated with various acute and chronic diseases of the thoracic organs.

For examination by percussion Auenbrugger recommended that the patient's shirt be drawn tightly over the chest or that the hand of the physician be gloved. The thorax was struck with the tips of the fingers "brought close together and at the same time extended." The examination was conducted during inspiration, during expiration and at the end of a full inspiration. By this difficult technic Auenbrugger was able to distinguish the normal percussion note and three abnormal forms of resonance: *sonus altior*, which corresponds approximately to tympany; *sonus obscurior* which is dullness, and *sonus carnis percussae*, or flatness. About two-thirds of the short treatise is devoted to the percussion tones associated with various acute and chronic diseases of the thoracic organs. One section, notably candid, discusses those diseases of the chest which are *not* revealed by percussion.

It is important to notice that Auenbrugger had considerable experience in morbid anatomy and that his thinking was directed along anatomic lines. Thus he says, in one of the earlier paragraphs of his book, that a clear and equal percussion note elicited from both sides of the chest indicates that the *air cells* of the lungs are free, and uncompressed either by a solid or a liquid body (Observation III, S 11). His descriptions of scirrhus of the lung (Obs. X, S 38) and of vomicae (Obs. XI, S 41) are extremely brief but strongly suggest experience in the dissecting room, just as his clinical notes bear the clear imprint of bedside observation. Hence Auenbrugger's name must be added to the list of clinicoanatomic correlators I have already mentioned.

Within the realm of clinicoanatomic correlation Auenbrugger added more precise *intra vitam* localization than had previously been possible. With respect to etiology and to the understanding of morbid processes, however, he contributed nothing. Thus, he says that chronic diseases of the lungs are due to two kinds of cause. The first is some hidden condition of the organs, which finally destroys them. Examples are (a) hereditary predisposition, (b) affections of the mind, especially nostalgia, and (c) occupation. Another category contains (2) "obvious causes," such as (d) a vitiated condition of the fluids, gradually produced, and (e) acute infections imperfectly cured. The vitiation of the humors arises from ingested substances that cannot be assimilated. Thus it is clear that in the thinking of Auenbrugger the newer ideas of anatomic localization were superimposed upon humoralistic concepts inherited from antiquity.

Equally reminiscent of ancient medicine is the emphasis on prognosis. Thus, under the heading of inflammatory diseases of the chest,[20] Auenbrugger lists no less than eight prognostic inferences that can be drawn from the results of percussion. Moreover, he accepted the ancient doctrine of critical days.[21] Details of this kind reinforce the strongly Hippocratic tenor of the entire book and provide additional proof of the statement previously made that Hippocrates and Galen were still alive in the eighteenth century.

It is of some interest to consider, however briefly, the origin and the fate of Auenbrugger's technic of percussion. The traditional story that the innkeeper's son had derived his innovation from watching the percussion of wine casks apparently was suggested by Neuburger,[22] who indicated, however, that he did not regard this as a fully satisfactory explanation. Auenbrugger states that clinical percussion produces "analogous results to those obtained by striking a cask . . . in different degrees of emptiness or fullness."[23] If one considers the difficulty of learning to percuss a chest and the even greater difficulty of inventing the art of percussion, one cannot help thinking that Auenbrugger's musical skill and lifelong interest in music may have contributed to his discovery.

The fate of Auenbrugger's contribution to medicine has interested many scholars, including Noltenius,[24] Neuburger,[25] Vierordt,[26] Sigerist,[27] Dock,[28] and James B. Herrick.[29] For present purposes it will be sufficient to summarize the facts and opinions assembled by these distinguished men. During the seven years of their gradual development, Auenbrugger's researches were ignored by his colleagues and supervisors in the hospital hierarchy. His book was published in a small edition in 1761. It was reissued in 1763 and 1775. In 1770 it was translated into French by a writer[30] who misunderstood the text. It received predominantly unfavorable or hostile comment from reviewers and was even the subject of ridicule. In 1808, one year before Auenbrugger's death, his work was translated into French by Corvisart.[31] Thenceforth percussion was permanently established in the practitioner's repertory.

For the initial neglect of Auenbrugger's work several explanations have been adduced. The small size of the original edition would have given no opportunity for widespread dissemination of the new method. The difficulty of the technic would have been an obstacle to its acceptance, especially by the more influential physicians, who would be too old to learn and who could more easily scoff than venture. Moreover, since percussion was a manual method, it may have been regarded as beneath the dignity of learned eighteenth-century physicians. Even more fundamental is the fact that by 1761 the basic principle of the localization of disease had not yet gained full recognition; hence Auenbrugger was ahead of most of his contemporaries. To these hypotheses James Herrick added the suggestion that the difficulties originated in certain asperities in Auenbrugger's own character, i.e., that he started the trouble by antagonizing his professors and inducing hostility in them.

Whatever the cause or causes may have been, it is more instructive to consider the stillbirth and subsequent revival of percussion against a wider frame of historical reference than has been used hitherto in analyses of the problem. The early neglect of percussion is best regarded as an instance of the opposition that is likely to arise against any important new idea in medicine and in many other fields of knowledge. This theme warrants more elaborate study than can be given it in the present essay; it is sufficient to cite here such analogies and precedents as the opposition to Harvey, Semmelweis, Pasteur, and Patrick Manson.

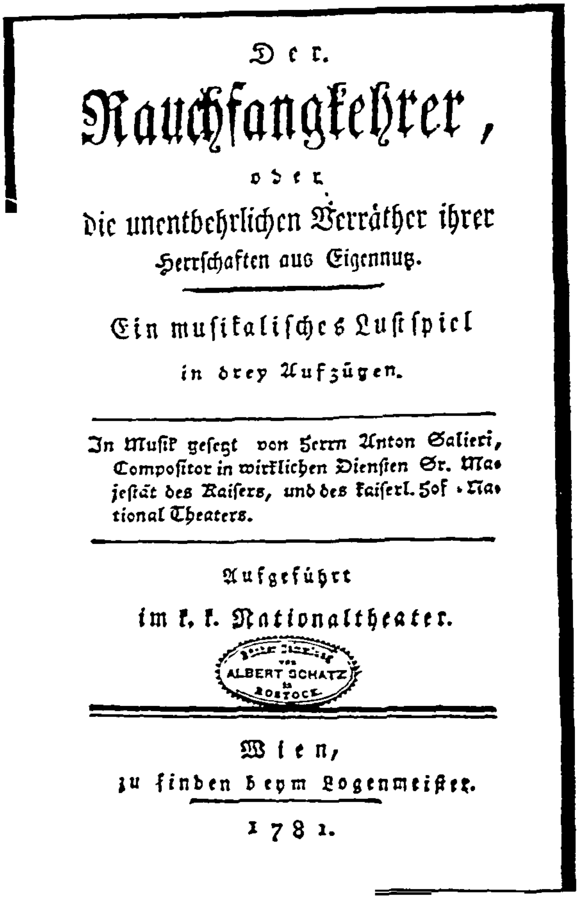
The writings of Auenbrugger and of his colleagues, his critics, his biographers and his commentators furnish an abundance of material from which one can reconstruct the background of his work and observe the social forces that influenced it.

The text of the Inventum bears the clear mark of a hospital of at least moderate size, which drew to itself large numbers of persons suffering from acute and chronic diseases of the chest. The clientele included soldiers as well as civilians. By governmental arrangement, autopsies were frequent; Auenbrugger's statements suggest that he may have performed the dissections in his own cases. The tenure of position in the hospital was long. There was a clinical hierarchy in which the higher officials were influential enough to blight any unapproved innovation. In the instance of Auenbrugger's researches the nabobs apparently chose to ignore that which they may have disdained to interrupt. The total impression obtained is that of a highly organized and conservative society, which did not absolutely forbid innovation but erected incomplete defenses against it.

Corvisart: It has already been mentioned that the revival of interest in percussion is due to Corvisart, who practiced and taught the art and also published a translation of Auenbrugger's book. Corvisart himself wrote one of the first modern textbooks of cardiology,[32] based on extensive experience at the bedside and in the autopsy room. His book is a valuable document for the period between Auenbrugger and Laennec. The student who reads Corvisart's treatise will find that great emphasis is laid on the external appearance of the patient. The examination included percussion of the chest, palpation or the cardiac impulse and pulse, and palpation of the abdomen. Auscultation was still to come. Very significantly, Corvisart's diagnoses were constantly checked by the observations at autopsy.

In the second edition of his textbook Corvisart made the following important comment:

"In one of the memoirs which I read some years ago before the Institute I proposed the idea of a work analogous to that of Morgagni but the converse of it; it would be titled On the Seats and Causes of Disease Investigated by Diagnostic Signs and Confirmed by Autopsy. But for such a work we would need at least a second Morgagni."[33]



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in drey Aufzügen.

In Muſik geſezt von Herrn Anton Salieri,
Compoſitor in wirklichen Dienſten Sr. Majeſtät des Kaiſers, und des kaiſerl. Hof-National Theaters.

Aufgeführt
im k. k. Nationaltheater.

ALBERT SCHATZ
ROSTOCK

Wien,
zu finden beym Logenmeiſter.

1781.

Title-page of libretto composed by Leopold Auenbrugger for opera by Antonio Salieri. *(Reproduced by courtesy of the Library of Congress.)*

The second Morgagni, who was to complete the foundations of physical diagnosis, was Corvisart's great pupil, Laennec.

Laennec.—Laennec was a man of great natural gifts developed by extensive education. As his writings clearly indicate, he had been well trained in the classics and was able to pass independent judgments on difficult passages in the Hippocratic canon.[34] His book shows a thorough knowledge of the older literature. In this he resembled Morgagni. Like Morgagni, he also had much of the developmental outlook of the historian. Like Morgagni and Corvisart, he was critical in his evaluation of the literature and in his evaluation of current ideas and new observations. Like Auenbrugger, he possessed musical gifts, or at least musical interests.[35]

Like his distinguished predecessors, Laennec based his work directly on morbid anatomy. His text abounds in references to the anatomic foundations of the diagnostic art, and a large proportion of his book consists of meticulous descriptions of postmortem observations. Microscopic study finds no place in his thought;[36] *chemistry, physiology and experimental* medicine likewise receive almost no attention.

Laennec's contribution is massive—almost overpowering. Almost singlehandedly he virtually created the art of physical diagnosis as it is now known, terminology and all.[37] The reader is amazed to discover in Laennec's *Traité* a nearly complete work on the physical diagnosis of thoracic disease,[38] still interesting and useful today, despite defects in the section on cardiology. By means of auscultation added to Auenbrugger's percussion, which Laennec used and esteemed, the physician now was enabled to recognize and localize consolidation, effusion, cavitation, bronchiectasis and many other conditions *during the lifetime of the patient.* Thus the art and science of medicine attained new heights. This is strikingly shown by one passage in Laennec's chapter on bronchiectasis. Here he describes in detail the history of a 41-year-old coachman in whom he observed signs of cavitation at the apex of the left lung, left-sided bronchiectasis and, subsequently, central pneumonia in the right lung. The autopsy confirmed these diagnoses exactly. Since Laennec apparently suspected that so high a degree of diagnostic precision might not be believed by his readers, he appended in a footnote the names of eleven witnesses.[39] Corvisart's desire for a work on the locations of diseases investigated by diagnostic signs was now handsomely fulfilled.

Laennec's contribution had several important implications. First, the art of diagnosis as he found it and as he left it was based on morbid anatomy but remained focused *at the bedside,* as it had been since the days of Hippocrates. There was nothing connected with auscultation which had to be done in a laboratory, and there was nothing that would take the physician away from the patient.

Second, as Laennec recognized, the new *art of physical diagnosis with anatomic* control could be learned in a hospital only. Only in a hospital could interesting cases be found in sufficient number and variety, and only in a hospital was it feasible to perform autopsies.[40] The educational implications of this fact have been discussed by Ackerknecht.[41]

It should also be recognized that the achievement of Laennec was related to a particular system of hospital administration. The hospitals of Paris were run, in true French style, by a centralized agency. To this agency a physician could apply for cases of whatever special type interested him. Thus Laennec had at his disposal enormous numbers of cases of thoracic disease.

Third, auscultation made possible the early recognition of pulmonary disease. Especially with regard to tuberculosis, this fact was of monumental importance to the public health.

Fourth, the establishment of the technic of diagnosis *intra vitam* paved the way for some of the great clinical portrayals for which the nineteenth century is famous.

After Laennec the art of physical diagnosis was to undergo improvement at the hands of Piorry, Skoda, Stokes and others. At the end of the nineteenth century came the introduction of roentgenology. Detailed study would probably show that roentgenology at first stimulated the art of physical diagnosis but ultimately forced it into decline.[42] These considerations, however, lie outside the scope of the present study.

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2. Hippocrates. With an English translation by W. H. S. Jones (vol. 3 transl. by E. T. Withington). Loeb Classical Library. London, W. Heinemann, 1923-1931, 4 vols. See vol. 1, p. xxix. (*Note*: The author wishes to express appreciation to the Harvard University Press for gracious permission to use the excerpts that appear in the subsequent pages of this essay.)

3. A similar approach was adopted by the late W. A. Heidel in his book Hippocratic Medicine (New York: Columbia University Press, 1941).

4. See, for example, *The Sacred Disease*, VI (Loeb Library translation, vol 2, pp. 153-155).

5. "For if he discover and declare unaided by the side of his patients the present, the past and the future, and fill in the gaps in the account given by the sick, he will be more believed to understand the cases, so that men will confidently entrust themselves to him for treatment." *Prognostic I* (Loeb Classical Library, translated by W. H. S. Jones, vol. 2, p. 7).

6. *Prognostic II* (Loeb Library translation, vol. 2, pp. 9-11, slightly modified).

7. *Ancient Medicine X* (Loeb Library translation, vol. 1, p. 31).

8. See, for example, *On Diseases, II* 28-30 (Littre translation, vol. 7, pp. 47 ff.).

9. *Epidemics IV, 8* (Littre, vol. 149) enlargement of the liver; Epidemics IV, 23 (Littre V, 164 ff.) enlargement of the spleen; *Epidemics V, 1* (Littre V, 205) induration in abdomen; Internal Affections 24 (Littre VII, 229) induration and swelling of the liver; Internal Affections 32 (Littre VII, 249) stony hardness of the spleen; Int. Aff. 33 (Littre VII, 251) changes in size of the spleen.

10. This question has long been the subject of controversy. See, for example, Adams, F.: The Genuine Works of Hippocrates, London, 1849, vol. 1, p. 351. See also Littre V, 361.

11. *On Diseases II, 59* (Littre, VII, 92-93).

12. *On Diseases II, 61* (Littre, VII, 95 ff.) The Greek text is obscure as to the type of sound, but the fact that auscultation was practiced is unmistakable. For Laennec's comment on this passage, see his *Traite de l' Auscultation Mediate*, Part 1, chap. 3 (Paris, 1879, p. 25, n. 1).

13. *Epidemics V, 14* (Littre V, 215) and *Epidemics V, 55* (Littre V, 239) may refer either to rales or to snorting noises. *Epidemics VII, 12* (Littre V, 389) rasping noise in the chest and trachea. *Epidemics VII, 28* (Littre V, 401) noise came from the chest "like that made by the women who are called ventriloquists."

14. *On Diseases III, 16* (Littre VII, 153-155). See also *On Diseases II, 47* (Littre VII, 71).

15. This development has recently been described and analyzed by Dr. Paul Klemperer (J. Mt. Sinai Hosp. *24*: 589-603, 1957).

16. It is interesting that one of the few favorable reviews of Auenbrugger's book was written by Haller (Goettingische Anzeigen von Gelehrten Sachen *1*:1013-1016, 1762).

17. The utter obscurity and inaccessibility of internal diseases explains such titles as Benevieni's De *Abditis* . . . Morborum Causis (1507).

18. Virchow, R.: Morgagni and der anatomische Gedanke. Berlin: Hirschwald, 1894, 28 pp., 2d ed.

19. Der Rauchfangkehrer, Vienna 1781 and Berlin 1783. Text and libretto in Library of Congress. Microfilm of libretto in N. Y. Academy of Medicine. The libretto is anonymous but is attributed to Auenbrugger by Max Neuburger (Neuburger, M.: Leopold Auenbrugger und sein Inventum Novum, Vienna, 1922, p. 6). A scathing contemporary review (Cramer, C. F.: Magazin der Musik, Hamburg, 1783, vol. 1, p. 353) likewise does not name the author of the libretto. The convincing evidence of Auenbrugger's authorship is contained in a letter of Mozart, quoted by Neuburger (op. cit., p. 51, note 12).

20. Obs. V. §25.

21. Obs. V, §22 and 24.

22. Neuburger, M.: op. cit., p. 11.

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32. Corvisart, J. N.: Essai sur les Maladies et les Lesions Organiques du Coeur et des Gros Vaisseaux. Paris, 1806; 2d ed., 1811; 3d ed., 1818.

33. Corvisart, J. N.: Essai sur les Maladies et les Lesions Organiques du Coeur et des Gros Vaisseaux. Paris 1811, 2d ed., p. 25.

34. Laennec, R. T. H.: Traite de l'Auscultation Mediate. Second edition (1826), reprinted. Paris, 1879, p. 25, n. 1; p. 452, n. 1; p. 647 and n. 1.

35. References to musical instruments abound in his work, e.g., flute (op. cit., p. 46), oboe (p. 53) and harp (p. 654). A murmur heard over the subclavian artery is described in musical notation (p. 743).

36. Laennec: op. cit., p. 186.

37. For information on the development of the stethoscope see (a) Laennec: op. cit., p. 5; (b) Doe, J., and Sheldon, P. B.: Bull. N. Y. Acad. Med. *11*:608-626, 1935; (c) Mc Kusick, V. A.; Sharpe, W. D., and Warner, A. O., Bull. Hist. Med. *31*:463-487, 1957.

38. "I have attempted to present a complete treatise on the diagnosis and treatment of organic diseases of the chest." Laennec, op. cit., p. 9.

39. Laennec: op. cit., p. 154.

40. Laennec: op. cit., p. 9.

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42. See, for example, Williams, F. H.: The Importance of Knowing the Size of the Heart: Inaccuracy of Percussion in Determining it as shown by X-ray Examinations, Med. Communicat. Mass., M. Soc. *18*:173-188, 1899.

any application in a civilized community."

He describes clinically, with illustrations, *the "change of sex" operation, showing* exactly what it is, with its physical risks and limitations.

Three appendices and a bibliography support the text.

The book is recommended to the lay public, in the hope of better understanding of this complex problem, which is increasing rather than decreasing.

MAX THOREK, M.D.

Instrumentation in Anesthesiology. By William H. L. Dornette and Verne L. Brechner. *Philadelphia: Lea & Febiger, 1959.*

The authors have met the need for a concise, easily read and well illustrated book describing the principles upon which the modern electronic instruments used in medicine are based. The advances made in the understanding of physiologic processes have made it necessary to turn to electronic instruments, to go beyond the limitations of man's ordinary senses. Although this text is directed to the anesthesiologist, it is a valuable addition to the library of every doctor who wishes to make himself more valuable through the understanding of these instruments, which are daily becoming more and more a ,part of every hospital's armamentarium. It is a "must" in the library of every hospital.

DAVID KATZ, M.D.

Ptoses Abdominales et Prolapsus Pelviens: Clinique et Thérapeutique Chirurgicales (Abdominal Ptosis and Pelvic Prolapse). By Lucien Diamant-Berger. Paris: G. Doin et Cie, 1958. Pp. 194, with 119 illustrations.

Dr. Diamant-Berger points out that since the era of asepsis this branch of surgery has been the subject of more books than has any other. He did not wish to write an actual treatise on ptosis and prolapse, or a literary tome compiled from the work of many authors, or a series of reviews. On the contrary, he expressed opinions based on the problems to which he has devoted so much study and so many publications.

Ptosis of the stomach, intestines, kidneys and liver, as well as prolapse of the rectum and genital organs, is reviewed. These conditions are usually treated by various specialists, but essentially they are within the domain of general surgery. The conditions usually affect one type of patient, viz., the ptotic, thin, nervous, frail woman.

The numerous operations for correction of ptosis are relatively simple, as prolapsed organs readily lend themselves to manipulation. Some of these operations, however, may be followed by poor results, with recurrence.

A considerable portion of the book (89 of its 186 pages) is devoted to genital prolapse, which is frequently encountered in women after childbirth. The anatomopathologic aspects of various degrees of retroversion, including complete prolapse of the uterus and associated colpocele, rectocele and cystocele, are discussed in detail. Indications for corrective operation, surgical technics (of various authors) for anterior and posterior perineorrhaphy, prolapse of the uterus, etc., are presented at length.

A chapter is devoted to the correction of genital prolapse following hysterectomy. The author's technic of colpopexy, in which the relaxed vagina is fixed to the abdominal wall by means of an aponeurotic band, sutured to the dome of the vagina, is well described. He has successfully employed this operation on 20 patients, and it has been adopted by many other surgeons.

There is a chapter on nephropexy for renal ptosis. The author points out the important role of ptosis in the production of urinary, gastrointestinal and nervous symptoms. Good results depend on a judicious choice of operation. Dr. Diamant-Berger employs nephropexy, using capsular flaps which he attaches to the last ribs. The author fails to note, however, that ptosis occurs in the obese as well as the thin person.

This book is enhanced by the excellent illustrations of André Marait. The student, physician and surgeon will profit from acquainting himself with the author's thorough method of handing the subject.

—CHARLES PIERRE MATHÉ, M.D.

Groves' Synopsis of Surgery. By Cecil Wakeley. Bristol: John Wright & Sons, Ltd., and Baltimore: The Williams and Wilkins Company, 1958.

This fifteenth edition of a classic students' handbook appears only four years after its predecessor. This is because of the rapid advancements that have taken place in the interim, particularly in vascular surgery and arterial grafting and the impact of the new antibiotics upon modern surgery. The author acknowledges the help of Mr. L. T. Cotton, of King's College Hospital, with this revision. Sir Cecil Wakeley is a past president of the Royal College of Surgeons of England.

The text, as revised, continues to fulfil its original intent—to give the student and the busy practicing surgeon concise "refresher" information in a small volume that is easy to read and easy to handle. It is hoped that the book will have wide distribution in the United States, being, as it is, practically a dictionary of modern surgery.

—O. C.

Atlas of Surgical Techniques in Major Surgical Procedures: Neck, Thorax, Abdomen and Pelvic Surgery. By R. Michel-Bechet. Paris: G. Doin et Cie., 1959. Pp. 580, with 1,125 illustrations by P. Contier.

This magnificent one-volume work is timely and extremely practical. The accent is on the illustrations, which are splendid, while the text is reduced to the most necessary essentials. To use the author's own phraseology, he intended "a maximum of illustrations and a minimum of text," giving as a reason his conviction that the surgeon can thus promptly refresh his knowledge of the different steps of an operative procedure prior to its performance. He also points out that the work is intended not to replace the existing great texts on surgical technic, but to serve as a means of immediate consultation and as a refresher in anatomic and operative details.

Only the essentials are brought into sharp focus; not all surgical technics are described and depicted. The author has selected only those general surgical procedures which are in constant use, pointing out the accepted methods, the author's personal technic and his modifications of standard operations.

All in all, this is a work of extremely practical value and should be in the library of every practicing surgeon, be he specialist or general surgeon, and certainly in the hands of the student, resident and intern, as well as those who are called on to perform emergency operations.

Not enough can be said about the excellence of the illustrations. They are practical, brilliantly executed and highly instructive. The work can be unreservedly recommended, not only as a reference book but as a general aid to the surgeon. While it has particular value to those who read French, the illustrations will serve very well, for they "speak" volumes.

—MAX THOREK, M.D.

Current Therapy, 1959. Edited by Howard F. Conn. Philadelphia: The W. B. Saunders Company, 1959. Pp. 781.

With this publication, *Current Therapy* begins its second decade of service to the practicing physician. Prepared with the aid of an imposing consulting board, this edition brings up to date authoritative therapeutic procedures in all situations that confront the practitioner. The editorial policy has been altered through the years, and while in early publications two to four methods of treatment for any specific disease were described, the editor now presents more than one treatment only when major differences of opinion exist among recognized authorities. A policy of rotation of topics among authors has made for more concise presentation.

New in this edition are tables of normal laboratory values of clinical importance, a list of packaging information on all drugs mentioned and a table of pediatric dosage. The section on poisoning has been enlarged.

As every physician and surgeon knows, *Current Therapy* is an indispensable series, and should be in constant use by every practioner.

—M. T.

Abstracts from Current Literature

Carcinoma of the Breast—Radiological Aspects. Berman, H. L., Col. M.C., U.S.A., M. Ann. 27:287, 1958.

The role of radiation therapy in the definitive management of carcinoma of the breast, even at this late date, remains more or less an enigma. Statistical analyses dealing with this subject are not easy to evaluate.

In determining the indications for various methods of treatment for mammary carcinoma, one must be concerned with the extent of the disease, or so-called clinical staging. There are several classifications, most of which generally categorize all patients into four groups:

Stage 1: Small tumor localized to the breast.

Stage 2: Tumor in the breast plus limited axillary metastases.

Stage 3: Extensive local and axillary spread.

Stage 4: Distant metastases.

The author advances the following recommendations for the treatment of carcinoma of the breast:

Stage 1.—Radical mastectomy alone. The author considers information obtained by examination of the axillary contents definitely valuable. In his opinion, the overall morbidity rate associated with this procedure is not greater than that which accompanies the intensive irradiation supplemental to simple mastectomy by McWhirter's technic. This irradiation is unnecessary for patients without axillary metastases. For lesions in the medial half of the breast and for patients who have "positive" axillary nodes, postoperative irradiation to the axillary-supraclavicular area and the internal mammary chain is recommended. Notwithstanding its alleged ineffectiveness, the author is still convinced that there are instances in which the diseases may be limited to the area that can be covered by irradiation, and an occasional patient may be salvaged.

Stage 2.—Simple mastectomy and intensive postoperative irradiation (McWhirter technic).

Stage 3.—Irradiation alone. Patients in this stage have extensive disease, with such criteria of inoperability as inflammatory carcinoma, extensive edema of the skin and fixation of the tumor to the thoracic wall.

As regards the new high voltage or supervoltage machines, including the cobalt bomb and the betatron, it is unlikely that any improvement in the survival statistics will result from the use of these machines, since there is a limit to the amount of radiation the tissues can tolerate, and since surgeons have ample experience with high doses of radiation.

WILLIAM E. NORTH, M.D.

Dysfunctional Uterine Bleeding. Thomas, H. H., Southern M. J. 51:1266, 1958.

A simplified approach to this type of bleeding has become available during the past three years, with the advent of the long-acting estrogen and progesterone preparations, and this eliminates the complicated pill and injection formulas that have long been standard in the therapy of dysfunctional uterine bleeding.

The hormone preparations, used singly or in combination, have proved their value in controlling and handling abnormal bleeding.

EDMUND LISSACK, M.D.

The Scalenus Anticus and Related Syndromes. Upmalis, I. H., Surg., Gynec. & Obst. 107:521, 1958.

The author cites numerous anatomic causes that predispose to the development of the scalenus anticus syndrome by compressing the neurovascular bundle. In most of the cases depression of the shoulder, with or without elevation of the thoracic operculum, was the chief factor in causing intermittent and prolonged stretching and compression of the neurovascular bundle.

The author states that the diagnosis at times can be difficult. In general, the syndrome occurs between the ages of 20 and 60. It is more often observed in the female than in the male, especially if there is a history of trauma. The most common symptoms are pain and paresthesia of the involved arm, in areas chiefly supplied by the ulnar nerve. Physical examination may reveal no abnormalities, such as impairment of touch, pain and temperature, muscular atrophy and ischemic changes in the extremity.

Treatment is conservative, consisting of physiotherapy aimed at strengthening the trapezius muscle. Surgical treatment is indicated for patients with definite neurologic or vascular changes in the extremity if they fail to respond to conservative management.

JOHN A. ZIEMAN, M.D.

Cancer of the Ovary. Cron, R. S., M.D. Philippine J. Cancer 2:95, 1958.

The incidence of ovarian neoplasms in a hospital caring for private patients only is 9.1 per cent. Only 11.1 per cent of the tumors were malignant. Ascites was present in 247 per cent. Ovarian malignant disease is reported to be increasing, if due consideration is given for the increasing age of the American woman.

Success in treatment depends upon the histogenetic, histologic and clinical extent of the disease. The survival rate for all types of ovarian cancer is about 45 per cent. Surgical intervention is still the most satisfactory approach to treatment. Early diagnosis, however, by means of pelvic examination, is a most important factor in combating the high mortality rate of this disease. Routine radiation therapy, especially that delivered by the radiocobalt apparatus should be utilized whenever possible.

Ovarian carcinoma has often been called the "silent" tumor of the abdomen. It is true that a high percentage of such tumors produce no symptoms, and, even though routine periodic pelvic examinations are performed, symptomless carcinoma will be detected only a few times in the life of the average gynecologist.

EDMUND LISSACK, M.D.

Carcinoma of the Thyroid in Children After X-Ray Therapy in Early Childhood. Rooney, D. R., and Powell, R. W., J.A.M.A. 169:69, 1959.

Ten cases of carcinoma of the thyroid in children aged 17 or younger have been added to the recorded cases, bringing the total to at least 357. The cases of these 10 children are all of the cases of thyroid carcinoma in this age group recorded in the six major hospitals of Atlanta, Georgia. Seven of the 10 patients had been given roentgen therapy in infancy or early childhood for benign conditions. The 7 cases have been added to the reported cases of thyroid carcinoma in children after irradiation, bringing the total of 121.

Approximately one-third of all children with carcinoma of the thyroid had been treated with radiation therapy to the head, neck or thorax. This neoplasm is increasingly reported as occurring in children. The more frequent diagnosis can be correlated, among other things, with the formerly prevalent use of roentgen therapy for benign conditions in children. This correlation suggests that irradiation of the head, neck or chest in infancy or early childhood may be a causative factor in the development of thyroid carcinoma later in childhood. It it is valid one should expect an eventual decrease in the incidence of this neoplasm in children, as the practice of irradiation for benign childhood conditions decreases or is abandoned.

Small quantities of radiation in infants or young children may be followed by thyroid carcinoma, but even large doses to the thyroid area in an adult are apparently not followed by an increased incidence of this neoplasm, and the use of radiation therapy for adults when indicated should not have to be restricted. Further studies are needed before definite conclusions can be reached. Until that time, young children, with few or no exceptions, should be protected from all ionizing radiation in the treatment of nonmalignant conditions.

WILLIAM E. NORTH, M.D.

Mesenterial Lipoma Simulating Genital Tumor. Klier, E., Zntrlbl. f. Gynaek. 80:269, 1958.

Mesenteric tumors are subserous formations classified, according to the site of their origin, as mesenteric, retroperitoneal and undetermined. The cystic forms occur three or four times as frequently as do the solid types, which are usually lipomas and only occasionally fibromas, myomas or sarcomas. In most cases these masses are incorrectly diagnosed preoperatively as adnexal or uterine tumors.

The author reports the case of a 54-year-old primipara, in the menopause for one and one-half years, who complained of occasional burning pain in the upper part of the abdomen, abdominal fullness and pressure for the past three months. She had lost 15 pounds (6.8 Kg.) of weight within six months and complained of frequent fatigue. The value for hemoglobin was 61 per cent; the red blood cell count was 3,200,000 per cubic millimeter, and the sedimentation rate was increased.

Physical examination revealed, instead of a corpus uteri, a palpable tumor the size of a man's head, extending upward and to the right. Flat, hard, irregular immobile indurations were palpated to the right of and above the umbilicus. The history and observations led to a diagnosis of malignant adnexal tumor with extensive omental metastases or, alternately, of gastric carcinoma with Krukenberg tumors. A gastrointestinal series, however, gave negative results, making a genital origin of the growth even more likely.

Laparotomy revealed an irregular, hard, smooth tumor of the aforementioned size in the right lower abdominal quadrant. The mass was connected with the mesentery by a finger-thick cord, about 1½ inches (3.7 cm.) in length. After removal of this tumor another one, twice as large, was exposed after the incision had been enlarged upward. It was located between the two mesenteric leaves of the ileum, and its surface showed lipomas up to plum size, some pedicled. The large mass was removed, and a length of small intestine (110 cm.) at the ventral side of the tumor was resected. The patient's recovery was uneventful.

The weight of the two masses was 4.15 and 2 Kg. respectively. Both were partly soft, partly hard, yellowish and edematous. Microscopically they were identified as benign fibrolipomas with central calcification.

Outstanding in this case, as in others, were the scant and misleading symptoms and signs, prompting the erroneous diagnosis of the tumor's derivation from the genital system and of its malignancy.

ERNEST G. ABRAHAM, M.D.

Treatment of Resistant Contracture of the Bladder Neck in Women by Plastic Revision of the Vesical Orifice. Falk, D., J. Urol. 79: 447, 1958.

The author discusses that ever-present female problem, the "bladder neck syndrome." These are the women who complain of symptoms of obstruction, infection, frequency, urgency, and nocturia.

Nine patients were operated upon, with revision of the vesical neck by the retropubic approach. None of these women were cured, and the relief was transitory.

In the author's opinion, this syndrome requires more research as to causes, effects, diagnosis and treatment.

SHEPARD JEROME, M.D.

Surgical Aspects of Carcinoma of the Breast. Horwitz, A., M. Annals 27:81, 1958.

The surgical treatment of carcinoma of the breast is based on the classic concept that it begins as a focal disease and later, after an unknown length of time, becomes infiltrative, usually spreading to the regional lymph nodes or by the blood stream to more distant sites. If that assumption is true, the corollary follows that the earlier the primary lesion is discovered and extirpated the greater the probability of cure.

The term "early," however, is indefinite. The exact time of onset of carcinoma of the breast is impossible to determine. The time interval between the *in situ* stage and the infiltrative stage is unknown. Nor is it known definitely how long it takes for local disease to involve the regional nodes or spread to distant sites. There is no standard pattern in the progress of the disease.

The only absolutely "early" case is the "surprise" carcinoma discovered by the pathologist. In order to obtain more of these, a closer scrutiny should be given to those "borderline" cases. When there is persistent thickening or grittiness of the breast, especially in the upper outer quadrant or tail, especially in a patient past 40, a wedge of this tissue should be removed for biopsy. Recurrent cysts appearing after several biopsies should be an indication for the removal of all breast tissue through a submammary incision, without removal of the nipple, for there is growing evidence that women to whom this applies run a greatly increased risk of carcinoma. And what is more distressing is that often the carcinoma in these cases is obscured by the cystic disease or by the previous surgical procedures, so that its discovery is much too late.

Irradiation is excellent for palliation. After radical mastectomy, if there is fairly extensive involvement of the axillary nodes, irradiation may be used. Whether it improves the rate of survival is questionable.

Surgical castration is advised for all women with functioning ovaries if there is any involvement of the axillary nodes. Newman has observed metastases to the ovaries in about 50 per cent of patients with extensive metastases.

Adrenalectomy and hypophysectomy are still in the experimental stage.

Chemotherapy at the time of operation may be found useful in preventing the dissemination of viable malignant cells in the general circulation.

Operation is not the ultimate answer to the problem, but until something more effective is found it offers the patient her best chance of cure. Currently the radical mastectomy, as Halsted said more than 60 years ago, "done properly and in time," is certainly the best hope of the patient with carcinoma of the breast.

WILLIAM E. NORTH, M.D.

To William Worrall Mayo, a physician was a dedicated person who must put the welfare of his patients before his own private gain. He and his sons were there not to accumulate money, but to help people to be healed. His own wanderings, his excursions into tailoring, land surveying and politics, had given him insight into people's minds. . . . They were adequately paid for their services, but the interest of their work seemed to satisfy the larger hunger. Placing personal character above personal possessions was the first lesson which Doctor Mayo taught his sons. In Europe, such unworldly notions might have turned the sons into a pair of dilettantes, but in the bracing mental atmosphere of the north-west, it was possible to switch over the energy which most men applied to dollar-making into the pursuit of professional efficiency.

—*Williams*

THE JOURNAL OF THE INTERNATIONAL COLLEGE OF SURGEONS

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There is still room for improvement, particularly in the technique of those operations which are not considered to be major surgery. Haemorrhoids are still torn rather than dissected out; the average operation for hernia is still coarse, traumatic, and unphysiological; and even the gentle surgeon is often content to apply his principles to the deeper layers only, forgetting the physiology of the skin and subcutaneous tissues. Yet the day is clearly not far distant when all operations will be done with the unhurried exactness of the surgeon-neurologist, when all scars will be the invisible line of the plastic surgeon. For the beautiful scar is more than a work of art. Wherever placed it is proof of healing, not merely without sepsis but without any recognizable reaction to repair: it is a guarantee of lasting comfort for the patient and of untainted soil for the man who may have to come afterwards. It is the signature of the gentle surgeon.

—*Ogilvie*

IMPORTANT ANNOUNCEMENT

Contributors of scientific articles for publication in The Journal of the International College of Surgeons from Europe, the Near East and the Middle East should send their articles to:

European Office of the
International College of Surgeons
6-8 Rue de la Confederation
Geneva, Switzerland

A special committee has been appointed to evaluate the papers submitted for publication. The Journal publishes summaries in English, French, German, Spanish, Italian and Portuguese. Summaries of articles should be included in as many of these languages as possible.

AVIS IMPORTANT

Les auteurs d'articles scientifiques destinés à être publiés dans le Journal du Collège international de chirurgiens sont priés d'adresser leurs articles à l'adresse suivante pour l'Europe, le Proche et le Moyen Orient.

Bureau Européen du
Collège international de chirurgiens
6-8 rue de la Confédération
Genéve (Suisse)

Un comité a été nommé pour l'examen des articles à paraître. Les auteurs sont priés de joindre à leur travail de brefs résumés en français, anglais, allemand, espagnol, italien et portugais si possible.

The following pages comprise

Section II

the BULLETIN

of the

Journal

of the

International College of Surgeons

Schedule of Meetings

INTERNATIONAL COLLEGE OF SURGEONS

1959

June 19-21 Lyons, France	French Section International College of Surgeons
July 15-16 Managua, Nicaragua	Nicaragua Section International College of Surgeons
July 25-26 Amsterdam, Netherlands	The Netherlands Section International College of Surgeons
August 8-9 Helsinki, Finland	Finland Section International College of Surgeons
August 19-20 Vienna, Austria	Austrian Section International College of Surgeons
August 22-23 Munich, Germany	German Section International College of Surgeons
August 25 Paris, France	French Section International College of Surgeons
September Santos, Brazil	Brazilian Section International College of Surgeons
September 28-29 Chattanooga Tennessee	Tennessee State Chapter U. S. Section, International College of Surgeons
September 30-October 4 Guayaquil, Ecuador	Ecuador Section International College of Surgeons
October 30 Hong Kong, China	China—Hong Kong Section International College of Surgeons
November 2 Tokyo, Japan	Japan Section International College of Surgeons
November 2 Bangkok, Thailand	Thailand Section International College of Surgeons
November 16-18 Hot Springs, Virginia	Mid-Atlantic Sectional Meeting U. S. Section, International College of Surgeons
December Taipei, Taiwan (Formosa)	China—Formosa Section International College of Surgeons
December Jaipur (Rajasthan) India	India Section International College of Surgeons

(Continued on next page)

Schedule of Meetings

(Continued from preceding page)

INTERNATIONAL COLLEGE OF SURGEONS

1959

MIDSUMMER POSTGRADUATE EUROPEAN TOUR

July 17 - August 27, 1959

Dr. Ross T. McIntire, Coordinator

TWENTY-FOURTH ANNUAL CONGRESS

North American Federation

(Canada, Mexico, U. S., Central American and Caribbean Sections)

International College of Surgeons

SEPTEMBER 13-17 CHICAGO, ILLINOIS

AROUND-THE-WORLD POSTGRADUATE CLINIC TOUR

October 10 - November 28

Dr. Edward L. Compere, Coordinator

1960

TWELFTH BIENNIAL INTERNATIONAL CONGRESS

International College of Surgeons

Prof. Dr. Pietro Valdoni, Rome, Congress President

MAY 15-18 ROME, ITALY

Joint Meeting
Canadian and United States Sections

INTERNATIONAL COLLEGE OF SURGEONS

Marlborough Hotel, Winnipeg, Manitoba
September 28-29, 1960

In Conjunction with the Manitoba Medical Association Meeting
September 26-27

General Chairman, DR. SAMUEL S. PEIKOFF
F.R.C.S. (Edin), F.R.C.S. (C), F.A.C.S., F.I.C.S., Winnipeg, Manitoba, Canada

Chairman, Scientific Program, DR. A. C. ABBOTT
F.R.C.S. (Edin), F.R.C.S. (C), F.A.C.S., F.I.C.S., Winnipeg, Manitoba, Canada

PRELIMINARY SCHEDULE

Advance Registration—Monday and Tuesday, September 26-27, 12 Noon to 5 P.M., Marlborough Hotel

United States Executive Council and International Executive Council Meetings—Tuesday, September 27, 1 to 5 P.M., Marlborough Hotel

Registration—Wednesday, 8 A.M. to 4 P.M.

Registration—Thursday, 8 A.M. to 4 P.M.

General Assemblies—Wednesday, 8 A.M. to 4 P.M.
—Thursday, 8 A.M. to 12 Noon

Specialty Section Programs—Thursday, 2 P.M. to 5 P.M.

Scientific Motion Picture Program—
Wednesday and Thursday, 8 A.M. to 9 A.M.

Session for Surgical Nurses—
Wednesday, 9 A.M. to 12 Noon and 2 P.M. to 3 P.M.

Luncheons—Wednesday and Thursday, 12 to 2 P.M.

Cocktail Hour—Wednesday, 6 P.M., Royal Alexandra Hotel

Banquet and Convocation—Wednesday, 7 P.M., Royal Alexandra Hotel

Dinner and Dance (Manitoba Medical Association)—
Thursday, 8 P.M., Marlborough Hotel

Women's Auxiliary Program—each day

A Hearty Welcome to Winnipeg

JOINT MEETING

Canadian and United States Sections

MARLBOROUGH HOTEL SEPTEMBER 28-29, 1960

We in Winnipeg are looking forward to the meeting of the International College of Surgeons with great enthusiasm.

The scientific aspect of any surgical society is generally the integral part of the program. I have attended many congresses of the College and have always been impressed with the high quality of the program and the distinction of the speakers. The late Dr. Max Thorek, founder of the College, endowed it with the major obligation that it serve as an instrument of good will and harmony and that it act as a means of raising the standard of surgery throughout the world. Medical science has no racial or political barriers. It has a common language.

Just as important as the scientific program, is the attitude of the College towards the humanities. It is always a pleasure to meet with surgical teachers of national and international renown; to exchange surgical views with fellow members in other parts of the world; to discuss and appraise their philosophies and thoughts, and, in general, to cultivate worthwhile human relationships between all men.

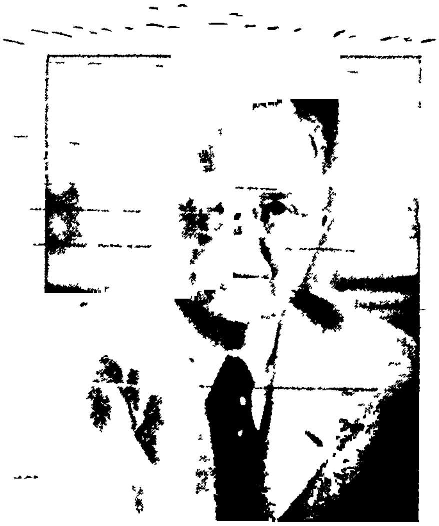
We have tried to emulate this pattern in our program and consummate the principles of the College. Winnipeg is a comparatively small city but boundless in its hospitality.

We hope that your visit here will be fruitful, friendly and enjoyable.

Samuel S. Peikoff
GENERAL CHAIRMAN

Canadian and United States Officers

Dr. George J. Strean
F.R.C.S.(C.), F.A.C.S., F.I.C.S.
President
Canadian Section


Dr. Karl A. Meyer
F.A.C.S., F.I.C.S. (Hon.)
Honorary Secretary
United States Section

Dr. Edward L. Compere
F.A.C.S., F.I.C.S. (Hon.)
President
United States Section

Dr. E. N. C. McAmmond
F.R.C.S., F.I.C.S.
Secretary
Canadian Section

Dr. Gershom J. Thompson
F.A.C.S., F.I.C.S. (Hon.)
President-Elect
United States Section

Dr. John B. O'Donoghue
F.A.C.S., F.I.C.S., D.A.B.
Secretary
United States Section

They Plan the Joint Meeting

Winnipeg, Canada September 28-29, 1960

Dr. Albert C. Abbott
Chairman
SCIENTIFIC PROGRAM COMMITTEE

Dr. Samuel S. Peikoff
General Chairman
JOINT MEETING

Dr. Frederick G. Allison
Chairman
M.M.A. LIAISON COMMITTEE

Hon. Stephen Juba
Mayor
WINNIPEG, CANADA

Dr. Alan A. Klass
Member
M M A. LIAISON COMMITTEE

Dr. Maurice M. Pierce
Co-Chairman
CONVOCATION COMMITTEE

MAYOR'S OFFICE
WINNIPEG, CANADA

As mayor of this Western metropolitan city, I am delighted to welcome the surgeons attending the Joint Meeting of the Canadian and United States Sections of the International College of Surgeons. I am confident that you will find a warm and friendly people in our city.

We live in an age when international meetings, dealing with a great variety of world-wide problems, strive to bring understanding between the nations of the world. Your assembly meets to exchange not only ideas but also to implement ideals, ideals which have as their sole objective the health and welfare of mankind.

Out of this meeting, as out of all your previous ones, benefits will accrue to each of you. We greatly admire the personal and professional dedication of the Fellows of the International College of Surgeons. and we are confident that the Joint Meeting of the United States and Canadian Sections will be mutually advantageous.

Perhaps this is the first time some of you have visited Winnipeg. We welcome you in the true spirit of Western hospitality.

S Juba

Stephen Juba
MAYOR

Dr. Hugh H. Saunderson
President
THE UNIVERSITY OF MANITOBA

Mr. Justice Samuel Freedman
Chancellor
THE UNIVERSITY OF MANITOBA

Joint Meeting
Canadian and United States Sections

INTERNATIONAL COLLEGE OF SURGEONS

Winnipeg, Canada

September 28-29, 1960

Plans for the Joint Meeting of the Canadian and United States Sections of the International College of Surgeons to be held at the Marlborough Hotel in Winnipeg, Manitoba, Canada, September 28-29, 1960, are assuming definite form. A stimulating binational North American assembly is assured, with the added possibility of participation by surgeons from abroad who have been invited.

Dr. Samuel S. Peikoff of Winnipeg, regent for the College in Manitoba, who is general chairman of the Meeting, is directing every conceivable effort toward making it both an important scientific occasion and an enjoyable social and recreational experience.

Manitoba in September is ablaze with autumn color. The city of Winnipeg considers the Meeting a civic responsibility and every department of the municipality is eager to have a hand in co-ordinating the preparations. The Honorable Stephen Juba, mayor of Winnipeg, is extending a personal invitation to each Fellow of the College and pledges the city's warm hospitality. The *Bulletin* has received a message over its private grapevine that Mr. Juba is evolving plans of his own to please and surprise the Fellows of the College and their ladies.

Dr. Peikoff's committees are giving him able and enthusiastic assistance.

Dr. A. C. Abbott of Winnipeg, chairman of the scientific program committee, is organizing an excellent, well-balanced program, highlighted with addresses by eminent surgeons from both Canada and

Places of Interest

WINNIPEG MANITOBA CANADA

The St. Boniface Basilica, symbol of Western French Catholicism since 1818, and the oldest church site in Western Canada

Manitoba's Legislative Building, located in Winnipeg and considered one of the most beautiful public structures in North America

Aerial View of Lower Fort Garry, only stone fort of the fur-trade days still intact in Canada

Dr. James A. Miller
Chairman
HOUSING COMMITTEE

Dr. John T. MacDougall
Chairman
TRANSPORTATION COMMITTEE

Dr. Lawrence R. Rabson
Chairman
PRESS AND PUBLIC
RELATION COMMITTEE

the United States. There are two sets of chairmen for the specialty sessions, one general and the other composed of residents of Winnipeg, thus assuring the utmost of co-ordination.

There will be early morning showings of surgical motion pictures, and two sessions are being organized for surgical nurses.

Altogether, the Meeting will have all the dimensions of a major scientific occasion. **Dr. G. Allison, Dr. J. McGoey** and **Dr. M. T. Macfarland** constitute a special liaison committee to establish cooperation with the Manitoba Medical Association, and **Dr. M. B. Wall** and **Dr. J. Hollenberg** are in charge of exhibits.

As to comfort and convenience, there are active committees of able and painstaking men who are looking after every last detail. They are being aided by representatives of the Manitoba Travel and Convention Bureau and, as we stated before, by officials of the city of Winnipeg.

The social program is most inviting.

There are two special luncheon sessions, a pre-Meeting dinner, a cocktail party, a banquet and convocation and then a culminating dinner and dance.

A special program of entertainment for ladies is being arranged by a committee of members of the Women's Auxiliary to the Canadian Section of the International College of Surgeons under the general chairmanship of Mrs. A. C. Abbott. (For details, please see Page 31.)

Dr. Peikoff and his committees are most fortunate to have the entire cooperation of the University of Manitoba and its Faculty of Medicine. A number of the faculty will preside over scientific sessions or act as secretaries. The luncheon programs will include the following distinguished guests: **Mr. Justice Samuel Freedman** of Winnipeg, member of the Court of Appeal of Manitoba and chancellor of the University; **Dr. Hugh Saunderson**, president of the University; **Dr. Lennox G. Bell**, dean of the Faculty of Medicine, and **Dr. A. A. Klass**, assistant professor of anatomy and of surgery.

All in all, the Joint Meeting of the Canadian and United States Sections of the College is an event no member of either Section should miss.

We suggest that you make your plans accordingly. Write *now* to the Advance Registration Secretary, International College of Surgeons, 608 Power Building, Winnipeg, Manitoba, Canada, for further information concerning the Meeting, or to the Manitoba Travel and Convention Bureau, at the same address as above, for information concerning travel and hotel reservations.

Chairmen of Committees

GENERAL CHAIRMAN

Dr. Samuel S. Peikoff

LIAISON WITH MANITOBA MEDICAL ASSOCIATION

Dr. G. Allison
Dr. J. McGoey
Dr. M. T. Macfarland

EXHIBITS

Dr. M. B. Wall
Dr. J. Hollenberg

FINANCE

Dr. J. Hollenberg
Dr. R. A. MacPherson
Dr. F. W. Hayter

MANITOBA TRAVEL AND CONVENTION BUREAU

Mr. M. Steinkopf
Mr. M. G. McMullen

REGISTRATION

Dr. E. Gedgaudas
Dr. M. H. Broder

TRANSPORTATION

Dr. J. T. MacDougall
Dr. G. Letienne

HOUSING

Dr. J. A. Miller
Dr. M. J. Swartz

SOCIAL

Dr. T. E. Holland
Dr. K. McGibbon

SCIENTIFIC PROGRAM PLANNING

Dr. A. C. Abbott
Dr. J. McGoey
Dr. A. A. Klass

RECEPTION

Dr. E. Stephenson
Dr. D. Swartz

ENTERTAINMENT

Dr. C. W. Hall
Dr. R. D'Agincourt

FILMS

Dr. F. Burgoyne
Dr. J. Isaac

BANQUET

Dr. A. P. Guttman
Dr. E. K. Vann

CONVOCATION

Dr. M. M. Pierce
Dr. H. Guyot

STEERING

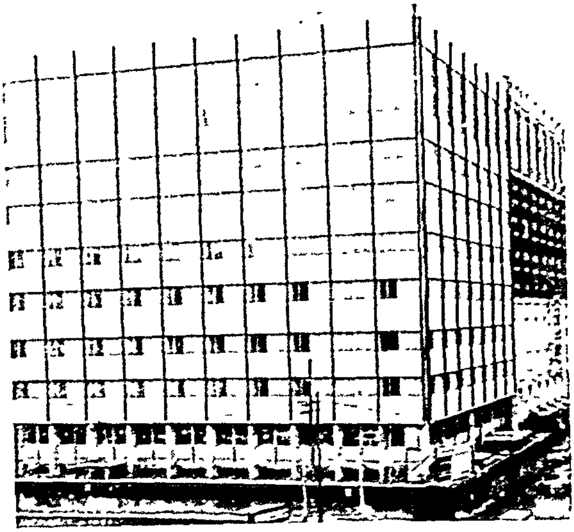
Dr. M. Lehmann
Dr. W. B. MacKinnon
Dr. E. Stephenson

PRESS AND PUBLIC RELATIONS

Dr. L. R. Rabson
Dr. Roy Richardson

WOMEN'S AUXILIARY

Mrs. A. C. Abbott
Mrs. S. S. Peikoff



The Marlborough Hotel and Its
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MEETING HEADQUARTERS

Chairmen of Specialty Sessions

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UROLOGY

General Chairman	*Local Chairman*
Dr. Gershom J. Thompson ROCHESTER, MINNESOTA	Dr. C. B. Stewart WINNIPEG, MANITOBA

OBSTETRICS and GYNECOLOGY

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Dr. William J. Blackwell CHICAGO, ILLINOIS	Dr. Elinor Black WINNIPEG, MANITOBA

ORTHOPEDICS

General Chairman	*Local Chairman*
Dr. Edward L. Compere CHICAGO, ILLINOIS	Dr. R. A. Tucker WINNIPEG, MANITOBA

E. E. N. T.

General Chairmen	*Local Chairmen*
Dr. Francis L. Lederer CHICAGO, ILLINOIS	Dr. M. Pierce WINNIPEG, MANITOBA
Dr. Arnold A. Grossman MONTREAL, QUEBEC	Dr. Robert Ramsay WINNIPEG, MANITOBA

Featured Addresses

LUNCHEON SPEAKERS

Wednesday, September 28	Thursday, September 29
JUSTICE SAMUEL FREEDMAN Chancellor *The University of Manitoba*	*DR. HUGH SAUNDERSON* President *The University of Manitoba*
DR. LENNOX G. BELL Dean *Faculty of Medicine* *The University of Manitoba*	*DR. A. A. KLASS* Assistant Professor of Anatomy and Surgery *The University of Manitoba*

The Prevention of Common Duct Strictures
LYON H. APPLEBY, M.D., Vancouver, B.C., Canada

Practical Aspects of Diseases of the Esophagus
PHILIP THOREK, M.D., Chicago, Illinois, U.S.A.

Vesicovaginal Fistulas
GEORGE J. STREAN, M.D., Montreal, Quebec, Canada

Diverticulitis
HARRY E. BACON, M.D., Philadelphia, Pennsylvania, U.S.A.

Jaundice—Its Surgical Significance and Treatment
JOHN B. O'DONOGHUE, M.D., Chicago, Illinois, U.S.A.

Plastic Surgery
NEAL OWENS, M.D., New Orleans, Louisiana, U.S.A.

Cancer of the Larynx
ARNOLD A. GROSSMAN, M.D., Montreal, Quebec, Canada

The Diagnosis and Treatment of Tumors and Cysts of the Neck
ARNOLD S. JACKSON, M.D., Madison, Wisconsin, U.S.A.

Postoperative Complications Following Gastrectomy
JOSEPH M. DE LOS REYES, M.D., Los Angeles, California, U.S.A.

Bladder Complications Due to Large Bowel Pathology
GERSHOM J. THOMPSON, M.D., Rochester, Minnesota, U.S.A.

The Surgical Treatment of Acute Arterial Thrombosis in the Lower Extremity
H. P. TOTTEN, M.D., Inglewood, California, U.S.A.

Blood Volume and Its Importance in Surgery
MAX S. SADOVE, M.D., Chicago, Illinois U.S.A.

How to Prevent Non-Union or Delayed Union in Fractures
EDWARD L. COMPERE, M.D., Chicago, Illinois, U.S.A.

Among those present when Mr. H. J. Anatole Jaro formally opened the International Surgeons' Hall of Fame Hospital Exhibit were Dr. Herbert Pollack, Mr. and Mrs. J. P. Barris, Mr. E. Todd Wheeler, Mr. John R. Fugard, Sr., Mr. Brock Arms, Mr. and Mrs. Abelardo Lopez, Mr. and Mrs. Arthur Nethercot, Mr. H. Norman Gallie, Mr. Eric Garfield and Mr. Ben Graves

International Surgeons' Hall of Fame Hospital Exhibit

The formal opening of the Hospital Exhibit on Sunday, May 8, 1960, in the International Surgeons' Hall of Fame was enlivened by an urbane, witty and imaginative address by Mr. E. Todd Wheeler, F.A.I.A., director of hospital planning with Perkins & Will of Chicago and New York.

The exhibition was organized by Herbert Pollack, M.D., chairman of the Hall of Fame Art Committee, and Anatole Jaro, Ph.D., its art director. With the generous cooperation of well-known architects who extended to them invaluable help in terms of advice, time and effort, they created a stimulating presentation of hospital architecture of today in perspective, both in relation to the past, which is everywhere in evidence at the International Surgeons' Hall of Fame, and the future, an enigma which we ourselves are fashioning.

Survival Complex

Of special interest is a model of the Southwest Texas Methodist Hospital in San Antonio, the first partially underground hospital in the United States which incorporates civil defense in its design and is safe from lethal radiation. The model and design were provided by Associated Architects, Phelps & Devees & Simmons, San Antonio, Texas, and Page, Southerland & Page, Whit Phillips Associates, Austin, Texas. Dr. Charles U. Letourneau, director of the program in

Featured Addresses

LUNCHEON SPEAKERS

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JUSTICE SAMUEL FREEDMAN Chancellor *The University of Manitoba*	*DR. HUGH SAUNDERSON* President *The University of Manitoba*
DR. LENNOX G. BELL Dean *Faculty of Medicine* *The University of Manitoba*	*DR. A. A. KLASS* Assistant Professor of Anatomy and Surgery *The University of Manitoba*

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How to Prevent Non-Union or Delayed Union in Fractures
EDWARD L. COMPERE, M.D., Chicago, Illinois, U.S.A.

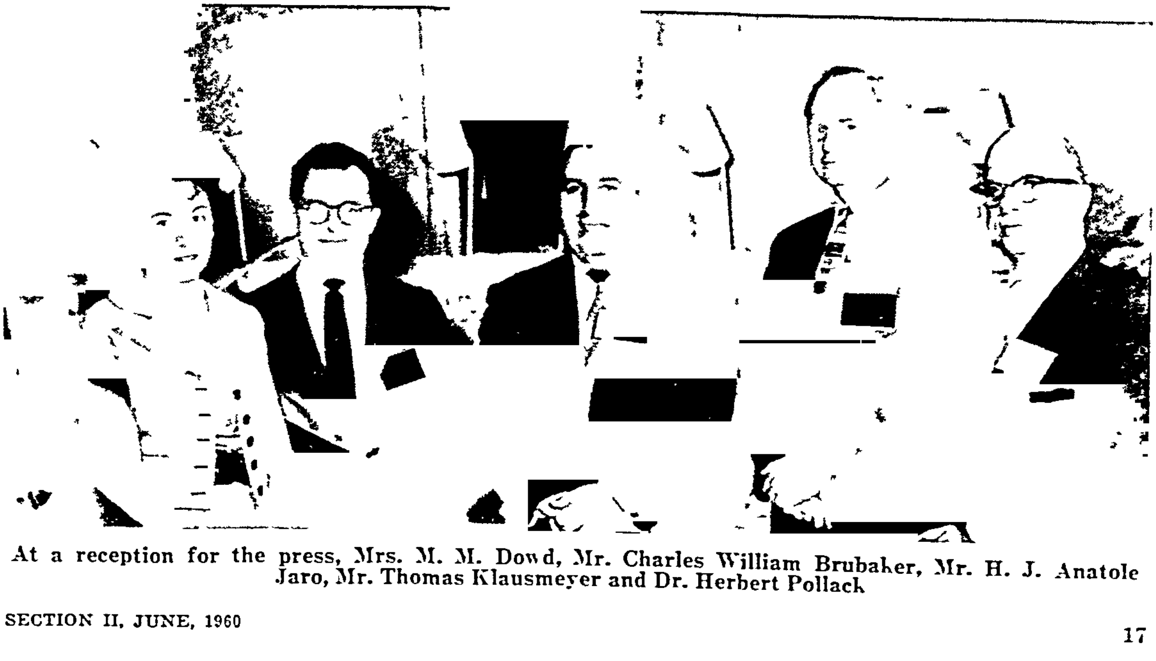
rooms of the past—the immediate past of the Nineteenth Century and reaching back, through the Middle Ages, to the crude shelters provided for the sick during ancient and prehistoric times in Greece, Japan, Peru, Spain and almost any place you choose to mention.

Mr. H. J. Anatole Jaro

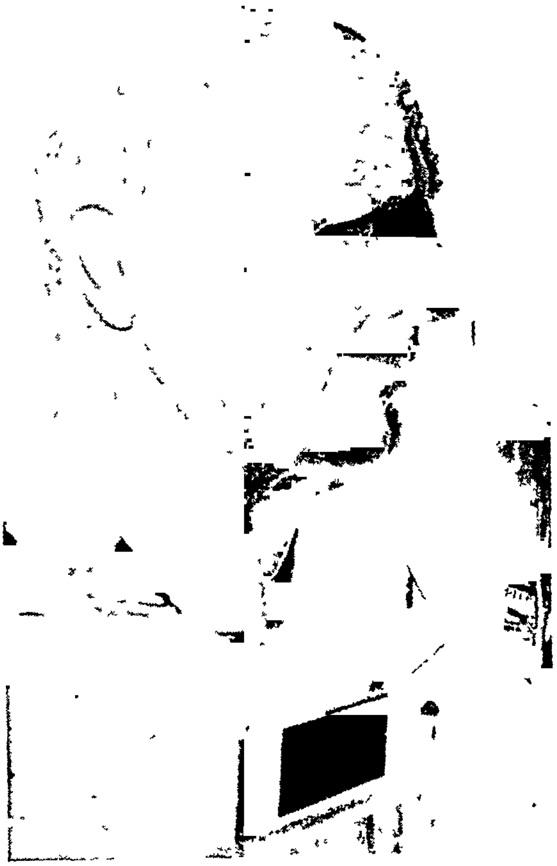
Mr. E. Todd Wheeler

After the Past and Present the Problematical Future

We live in the delusion that we build *for* the future. The preposition is wrong. All we possibly can do is build *toward* the future. In spite of all forethought and scrupulous avoidance of the architectural



At a reception for the press, Mrs. M. M. Dowd, Mr. Charles William Brubaker, Mr. H. J. Anatole Jaro, Mr. Thomas Klausmeyer and Dr. Herbert Pollack



Memorial portrait in bronze by Eric Garfield of Admiral Ross T. McIntire, former executive director of the International College of Surgeons

hospital administration at Northwestern University, Chicago, served as consultant to the architects.

Functional Idea in the Cloverleaf Floor Plan

Consideration of practicality guided the selection of the cloverleaf floor plan design which is embodied in the model of St. Joseph's Hospital in Belvidere, Illinois. The plan permits the reduction of operating costs to the minimum and allows maximum flexibility for the construction of add-on wings. The model and the design were created by F. O. Wolfenbarger & Associates, architects of Manhattan, Kansas. Dr. Letourneau was the medical consultant.

Solution of the Problem of Hospital Extension

The difficulties of adding extensions to existing hospital structures were surmounted to a noteworthy degree by the Vern E. Alden Company of Chicago, as shown by the paintings and floor plans of the modern extensions to the Little Company of Mary Hospital in Evergreen Park, Illinois.

Two City Hospitals North and South

Designs for two city hospitals are on exhibit, one in the North, the other in the South.

The northern city is Milwaukee and its hospital is the Mount Sinai, designed by A. Epstein & Sons of Chicago.

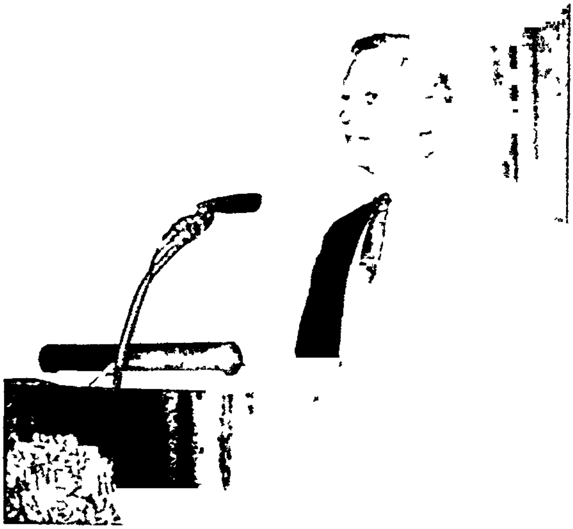
The southern city is New Orleans, Louisiana. **Edo J. Belli** of Belli & Belli, Chicago, Missouri and Tennessee, created the plan, incorporating a new circular operating room arrangement, for an addition to the Hotel Dieu.

Hospitals in Spain and Jordan

Also being shown are models of two hospitals geographically distant from the place of exhibit. Both embody modern concepts of hospital architecture. One hospital is in Granada, Spain, the other in Jerusalem, Jordan.

The Jordan Jerusalem hospital plan was created by **Mr. John R. Fugard Sr.**, of the firm of Fugard, Burt, Wilkinson & Orth, architects of the famed Chicago Wesley Memorial Hospital.

These plans, blueprints, paintings of various elevations and the complete models are particularly meaningful because of their setting in the Hall of Fame, full of representations of hospitals and operating rooms of the past—the immediate past of the Nineteenth Century and reaching back, through the Middle Ages, to the crude shelters provided for the sick during ancient and prehistoric times in Greece, Japan, Peru, Spain and almost any place you choose to mention.


Mr. E. Todd Wheeler

Mr. H. J. Anatole Jaro

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At a reception for the press, Mrs. M. M. Dowd, Mr. Charles William Brubaker, Mr. H. J. Anatole Jaro, Mr. Thomas Klausmeyer and Dr. Herbert Pollack

cliche, obsolescence is included in every specification. Every innovation is only a stepping stone to another. The architect of hospitals deals with more than steel and stone, takes into account more than the laws of physics and the edicts of taste. He is concerned with revolutions in science and technology which may be the hope of mankind but definitely are the despair of the builder of hospitals.

At this point, that man of imagination, E. Todd Wheeler, has himself a field day. His model of the hospital of the future room is a long flight of fancy from what, let us say, Florence Nightingale had in mind when she wrote to hospital architect Alex Graham and to Dr. George Evatt.

The Lady with the Lamp and the Electronic Monitor

Very moving indeed are the two original letters in Miss Nightingale's own handwriting, from the collection of Dr. Max Thorek. Contrasted to her view of the desirable are Mr. Wheeler's projections of the hospital in which the nurse may need specialized knowledge of radar and be handy with a Geiger counter.

Mr. Wheeler is confident of being able to handle considerations of convenience and sanitation, but the technic of beating the automobile at its game of eating up high-priced space has him worried. He concedes he may yet have to design a hospital that will accommodate eight-hundred beds and four-thousand cars and fears he may have to revise the ratio at that.

Contemplation of the future brings no dirge to Mr. Wheeler's lips. He is a boy intent on the approaching circus parade, imagining the unimaginable.

His inexorable pixy logic is a tonic to our minds, which, alas, like shopping carts in a supermarket, are loaded down with neatly-packaged ideas, quick frozen or half-baked.

The exhibit is attracting the attention of numerous hospital administrators

The press found him highly stimulating and the newspapers reproduced his drawings and his quips. (Radio and television and publications of all kinds are finding the entire exhibit worthy of a great deal of appreciative comment.) Soon, in some future number, the *Bulletin* will share with its readers Mr. Wheeler's address of

Sunday, May 8. Meanwhile, his visual exposition of the hospital of the future is, together with the presentations of actual hospital architecture, on view at the Hall of Fame. They may, at the conclusion of the present showing, be exhibited in other cities in connection with meetings of the International College of Surgeons.

Beauty Which Knows No Obsolescence

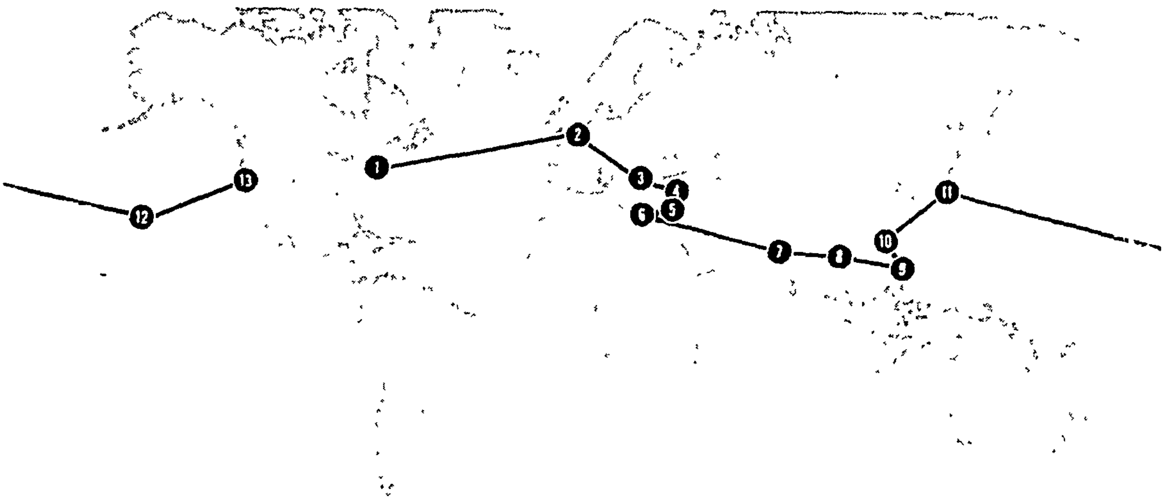
This exhibit has not isolated the architect from his life-long partner, the sculptor. Two works by Eric Garfield lend their grace to the rooms. One is the vital portrait in bronze of Admiral Ross T. McIntire, former executive director of the International College of Surgeons. Before his death last December, Dr. McIntire had taken keen interest in the plan for the exhibit. We think he would have approved of both the exhibit and the portrait.

The other sculpture is a small-scale design in terra cotta which the artist calls the Earth's Blessings and is a healthy and joyous symbol of motherhood.

Altogether, for pleasure and for profit, the hospital architecture exhibit at the International Surgeons' Hall of Fame is a noteworthy achievement.

◆

The Art Committee of the International Surgeons' Hall of Fame wishes to express its gratitude to the artists, architects and members of architectural firms whose close and generous cooperation made the exhibit possible. It singles out for special mention the kindness of Mr. Brock Arms of Perkins & Will; Mr. J. P. Barris, senior partner, and Mr. Abelardo Lopez, director of architecture, Vern E. Alden Co.; Mr. Edo J. Belli of Belli & Belli; E. Epstein & Sons, Inc.; Messrs. John R. Fugard, Sr., and John R. Fugard, Jr., of Fugard, Burt, Wilkinson & Orth; Dr. Charles J. Letourneau, hospital consultant; Mr. E. Todd Wheeler, director of hospital planning, Perkins & Will; Mr. Eric Garfield, sculptor; J. O. Wolfenbarger & Associates; and Associated Architects: Phelps & Devees & Simmons; Page, Southerland & Page, and Phillips Associates. The Committee also appreciates the services of photographers Vernon Petro and Axel Deertz.



1960
Around-the-World Postgraduate Clinics Tour

INTERNATIONAL COLLEGE OF SURGEONS

Dr. Horace E. Turner—Scientific Co-ordinator

55 DAYS
September 18-November 11

The 1960 International College of Surgeons' Around-the-World Postgraduate Clinics Tour is taking off earlier than did the tours of former years. Also, it will progress eastward.

Consequently, Paris will be visited in mid-September, and after the autumn equinox the tour will outwit the season and in perfect coordination of time and space move on to warmer regions. Furthermore, it will return to the United States and permit everyone who so wishes to be at home in plenty of time to carve the Thanksgiving turkey and wrap the exotic gifts purchased so economically en route suitably for Christmas.

Dr. Horace E. Turner will serve as the scientific co-ordinator of the tour, and the ever-adept management of the International Travel Service will smooth the way and provide comfort, convenience and freedom from concern to everyone aboard.

Meetings With Fellows of the International College of Surgeons

Good companionship is assured throughout the tour and good entertainment at stopping-off places. Joint scientific meetings with Fellows of the International College of Surgeons have been arranged at Athens, Bombay, Delhi, Bangkok, Manila, Hong Kong and Nagoya, but there also will be informal conferences and social contacts with leading members in other places.

The tour will last full fifty-five days and will encompass places of extraordinary beauty and interest which are not usually included in global journeys. Also, arrangements have been made for periods of rest and relaxation as a change from more strenuous travel, sightseeing and social activity. We mention the visit to a valley resort in Kashmir, an excursion to Baguio in the Philippines, the country journeys in Japan and the three-day stay in Hawaii.

Interspersed as the tour is with periods for sheer rest and enjoyment of leisure in places of exceptional beauty, it omits none of the great marvels of the world. They will all be seen at not too rapid a tempo—the inspiring monuments of classic Greece, the sacred places located in Jordan that are mentioned in the Bible, Giza with its Sphinx and pyramids, Luxor, the Taj Mahal, Angkor Wat, the shrines of Japan—and beauty, history and wonder everywhere.

The one consideration we must keep in mind, however, is that with an earlier departure date, reservations also must be made earlier. In fact, we urge you to write to International Travel Service, Inc., in Chicago immediately.

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* * *

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Recent Innovations in Urology

From the Secretary General's Notebook

OF MEN AND STATISTICS

During the month of April forty-one new applications for membership in the College have been received. During the same month, we received suggestions from our members who furnished us with the names of one hundred and eighty-four persons whom they recommended as members.

The payment of dues has been running ahead of any year in the past, which we think shows a definite interest on the part of our members.

The four centers which have been established for examinations for prospective applicants are beginning to function satisfactorily and we are happy to report we are receiving excellent cooperation from the various institutions that have been requested to cooperate with our examinations. The establishment of these four centers has reduced the customary number of examinations given in Chicago, and the idea seems to be receiving favorable acceptance by our members.

The program committee for the 1961 Congress, which will be held May 7-11 at the Palmer House in Chicago, Illinois, met at the College headquarters on April 21. Those present were: **Dr. Francis Lederer, Dr. Horace Turner, Dr. Edward Compere, Dr. M. Leopold Brodny, Dr. Francis Wolfe, Dr. Herbert Pollack, Dr. Peter Rosi** and **Miss Laura Jackson.** Everyone participated in the discussion and offered constructive suggestions, and we now have a skeleton outline of a plan, which is being developed further. There will be another meeting of the Committee on June 22.

In the April *Bulletin* we published a complete list of all our regents, vice-regents and credentials-committee members. We have found that the names of a few persons have been omitted and to these we beg to apologize. If you find any omissions, please do write the Chicago office, as we are anxious to have the list more accurate for the next printing.

Dr. Horace E. Turner at his desk in the College Home

There has been increased activity in many of the state divisions under the leadership of the regents, resulting in progressive vitality in many sections of our College. We are sure that under the leadership of **Dr. Ralph R. Coffey,** chairman of the board of regents, the state regions will function with increased vigor and be a source of strength to the College.

I have had a fine report from **Dr. Claude J. Hunt** of Kansas City, Missouri, on the meeting that was held in his home on April 23, at which time many of his vice-regents and credentials-committee members gathered for dinner and a business meeting. We hope to see some good results in the state of Missouri as a consequence of this meeting. I also received a complete report of the occasion from **Dr. John B. O'Donoghue** of Chicago, who attended, and although he did not call me the minute he got back home, which was about 4:00 a.m., he did report in shortly thereafter.

Dr. O'Donoghue also traveled up to Detroit on March 9 to attend the meeting called by **Dr. J. D. Miller** of Grand Rapids, regent of the state of Michigan. Present were **Drs. Lynn A. Ferguson** of Grand Rapids, **Owen Clark Foster** of Detroit, and **Wallace H. Steffensen** of Grand Rapids, vice-regents, as well as **Drs. Warren W. Babcock** of Detroit, **Alvin G. Lambert** of Royal Oak, **Clarence H. Snyder** of Grand Rapids and **Donald N. Sweeney** of Detroit, members of the credentials committee.

The discussion of various subjects was spirited, and agreement was reached on a number of important matters which should facilitate the conduct of College affairs in the state of Michigan.

Dr. Joseph O'Donnell, regent of the state of Iowa, made a trip into Chicago and reported in person on the results of his meeting at the Des Moines Club on April 25. This group of vice-regents and credentials-committee members is a very enthusiastic and progressive one and they are working hard on the membership in Iowa. As a result, several applications have been received from this state in the past few weeks. Dr. O'Donnell also reports that they are going to appoint additional vice-regents to help carry out the plans they are making.

I should like to urge you again to make your plans early to attend the meeting in Winnipeg, Canada, September 28 and 29, 1960. Read all about this meeting in this issue of the *Bulletin.*

Horace E. Turner

COURSE IN LARYNGOLOGY AND BRONCHOESOPHAGOLOGY

October 17 through 29, 1960

The Department of Otolaryngology, University of Illinois College of Medicine, will conduct a postgraduate course in Laryngology and Bronchoesophagology from October 17 through October 29, 1960, under the direction of Paul H. Holinger, M.D.

Registration will be limited to fifteen physicians who will receive instruction by means of animal demonstrations and practice in bronchoscopy and esophagoscopy, diagnostic and surgical clinics, as well as didactic lectures.

Interested registrants will please write directly to the Department of Otolaryngology, University of Illinois College of Medicine, 1853 West Polk Street, Chicago 12, Illinois.

United States Section

THE PRESIDENT'S MESSAGE

Chicago to Paris by Way of Tokyo and Hong Kong

Dr. Edward L. Compere

Virginia (Mrs. Compere) and I left Chicago, October 3, 1959, to drive to Emporia, Kansas, where we planned to visit our son and his family and to leave our red-and-white cocker spaniel, "Mr. Bones." After our visit with Ted, Marian, their two lovely little girls and exceedingly active young son, we drove to Tulsa, Oklahoma, to see my mother, who is living there with my sister and her husband, Mrs. and Mr. **H. H. Hughes**. On October 7, we flew from Tulsa to San Francisco, where we were met at the airport by our friends, **Rev. and Mrs. Cecil G. Osborne.**

On October 8, the Osbornes escorted us across the Golden Gate Bridge, where we visited the interesting area of Sausalito and lunched at the Alta Mira Restaurant, where the view and the food are both marvelous. From the AltaMira we were taken by the Osbornes to Tiburon, with its lovely bays, houses, boats, and old-world atmosphere blending with the new. In the evening of this same date, we were hosts to our friend, Mrs. Mae Best, and her grandson, **Bill Arliskas**, who had arrived in San Francisco to join us and the rest of our party on the Clinical Around-the-World Tour. We had wonderful Cantonese food at Trader Vic's and from there went to the small, cozy "Purple Onion," with its Bohemian atmosphere and excellent entertainment by a male trio.

October 9, I had to stay in my room to read and answer some stacks of mail which had caught up with me. Virginia, Mae Best and Bill Arliskas had lunch at Joe DiMaggio's Restaurant on Fisherman's Wharf. Virginia and Bill rode back up the hill on the cable car. This cable-car ride is a must for all newcomers to San Francisco, and it was Bill's first trip there. That evening, as guests of Mae Best, we had cocktails at the Top of the Mark. The fog outside was thick most of the time, but occasionally cleared enough so that we could see the lights of the Golden Gate bridge.

October 10, we were at the airport at 8:45 a.m., where we were joined by **Ruth and Eugene Jewett, Ralph and Ara Coffey,**

Dr. Edward L. Compere, president of the United States Section of the International College of Surgeons, acted as scientific co-ordinator of the 1959 Around-the-World Clinic Tour. Immediately upon his return to Chicago he found himself in a maelstrom of activity, much of it occasioned by the sudden and tragic deaths of Dr. Ross T. McIntire and Dr. Max Thorek. The account of his journey therefore had to wait for a more tranquil time.

Just before setting off for the Rome Congress, Dr. Compere managed to begin the story. We are therefore privileged to present Chapter One of a delightfully informal travelogue.

Harry and Peg Winkler, and many others, including the Wades from Lufkin, Texas, and some of our friends from Passaic, New Jersey. Twenty-seven of the party, which would subsequently become thirty-five in Hawaii, enplaned in San Francisco on a Pan American World Airline plane. A special menu printed by P.A.A. to welcome the International College of Surgeons group and bearing the insignia of the College was passed out to all who were on this flight. We were served an International College of Surgeons dinner with champagne and special cakes for dessert. Possibly the champagne helped, but at any rate the cloud effects during the afternoon, as we were far out over the Pacific, were very beautiful indeed, and we arrived safely in Honolulu after a very pleasant flight.

Edward L. Compere

Qualifications for Membership

United States Section International College of Surgeons

The Qualification and Examination Council for Membership in the United States Section of the International College of Surgeons has published a booklet of qualifications required of candidates applying for the various types of membership offered by the International College of Surgeons. For the convenience of the many surgeons who have expressed interest in membership in the International College, this booklet is available upon request.

Qualification Council Date
United States Section—International College of Surgeons
1516 Lake Shore Drive, Chicago 10, Illinois

Please mail me "Qualifications for Membership" information.
☐ Fellow ☐ Associate ☐ Junior (please indicate)
My practice consists of: (please check)

☐ Anesthesiology
☐ General Surgery
☐ Colon and Rectal Surgery
☐ Neurologic Surgery
☐ Ob. and Gyn. Surgery
☐ E. E. N. T. Surgery
☐ Orthopedic Surgery
☐ Plastic Surgery
☐ Radiology
☐ Surgery of Trauma
☐ Urologic Surgery
☐ Pathology

Name

Address

City Zone State

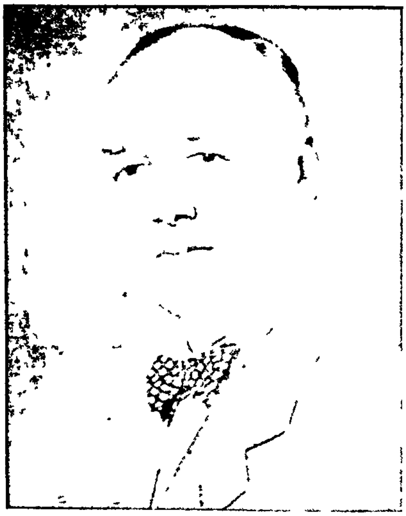
Please print or type name and address

Our Board of Regents

THE CHAIRMAN

RALPH R. COFFEY
M.D., F.A.C.S., F.I.C.S., D.A.B.

Kansas City, Missouri



Dr. Ralph R. Coffey
Chairman
BOARD OF REGENTS

No group of men is so important to the United States Section of the International College of Surgeons as is its board of regents. As Dr. Edward L. Compere, president of the Section, said at the regents' meetings on March 4, the regents and vice-regents are the eyes and the ears of the College.

And, were he speaking in particular of **Dr. Ralph R. Coffey** of Kansas City, chairman of the board of regents, he would have made, among numerous other highly appreciative comments, the observation that in addition to the gifts of sight and hearing Dr. Coffey is endowed to a most noteworthy degree with the capacity for clear and logical thinking.

Dr. Coffey was born in Parkville, Missouri, on June 19, 1899. He had his preliminary education at the Manual and Northeast High Schools of Kansas City, Missouri, and his academic training at the University of Missouri, graduating with the A.B. degree in 1921. He studied medicine at the University of Colorado in Denver, and was graduated M.D. in 1925. Returning to Kansas City, he then served an internship at the Kansas City General Hospital.

Dr. Coffey is director of surgery at Kansas City General Hospital and attending surgeon at St. Joseph Hospital and St. Luke's Hospital, both of Kansas City. Before becoming director of surgery at Kansas City General Hospital in 1950, he had served as chief of surgery at St. Joseph Hospital from 1946 to 1950.

He is a diplomate of the American Board of Surgery, a Fellow of the American College of Surgeons and of the International College of Surgeons and a member of the Southwestern Surgical Congress.

Guide to Young Surgeons

One of Dr. Coffey's conspicuous characteristics is thoroughness. This is particularly well exemplified by his excellence as a teacher. His residents and interns are soundly grounded in the fundamentals of surgery. Recently two of his residents were among the winners of the International College of Surgeons' awards and read their papers before a Congress assembly. They were favorably received, and both acknowledged their indebtedness to Dr. Coffey as a superb teacher and expressed their gratitude for his interest in developing young surgeons.

He thus fulfills one of the major obligations of Fellowship in the International College of Surgeons and advances the science and practice of surgery through the constructive method of training able and dedicated surgeons.

Dr. and Mrs. Coffey were among the members of the 1959 Around-the-World Clinic Tour, which was led by Dr. Compere. Dr. Coffey spoke at a number of the meetings of the various Sections that were visited and everywhere his addresses elicited an appreciative response.

The United States Section of the College is most grateful to Dr. Coffey for his re-acceptance of the chairmanship of the board of regents and looks forward to an augmenting volume of activity by the regents and vice-regents under his guidance.

◆

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COOK COUNTY GRADUATE SCHOOL OF MEDICINE

ANNOUNCEMENT

ANNUAL POSTGRADUATE COURSE

of the
UNITED STATES SECTION OF THE
INTERNATIONAL COLLEGE OF SURGEONS
Presented in Cooperation With
COOK COUNTY GRADUATE SCHOOL OF MEDICINE
JULY 25 and OCTOBER 24, 1960

The United States Section of the International College of Surgeons will again offer its Annual Postgraduate Course, in cooperation with the Cook County Graduate School of Medicine. It will be a two-week intensive review course in General Surgery presented at the Graduate School, and in the wards and operating rooms of Cook County Hospital.

The program will be offered under the supervision of the Hospital's Surgical Staff. It will include illustrated lectures, motion pictures, anatomy demonstrations, operative clinics and surgical demonstrations. Consideration will be given not only to surgical technic, surgical complications and management of the surgical patient, but also to an intensive review of the basic sciences in relation to clinical surgery. In addition to twenty hours of surgical anatomy on the cadaver, the program will include, among others, lectures and demonstrations on the following:

- Gastric Surgery
- Physiology
- Use of Blood and Derivatives
- Pediatric Surgery
- Surgery of Large Bowel
- Surgery of Small Bowel
- Intestinal Obstruction
- Anorectal Surgery
- Surgery of Pancreas and Spleen
- Gallbladder Surgery
- Thoracic Emergencies
- Vascular Surgery
- Hand Injuries and Infections
- Gynecologic Surgery
- Surgery of Hernia
- Abdominal Injuries
- Surgery of Esophagus
- Thyroid Surgery

The course will include 78 hours of instruction, and participants will be eligible for formal (Category I) credit from the American Academy of General Practice.

Applications should be addressed to:

REGISTRAR
707 South Wood Street
Chicago 12, Illinois

Section News

AUSTRIA

Prof. R. Ullik Elected to Council Membership

The Austrian Section of the International College of Surgeons held a general assembly in Vienna on October 27, 1959. Because **Prof. Dr. L. Schönbauer,** president of the Section, was unavoidably detained elsewhere, **Prof. Dr. T. Antoine,** vice-president, served as chairman of the occasion.

Tribute was paid to the memory of Prof. Dr. A. Plenk, member of the executive council of the Section, who had died on October 2. Prof. Plenk had been the head of the surgical department of the General Hospital in Linz, and a devoted Fellow of the College.

The executive council recommended the admission to Qualified Fellowship of the following: **Prof. Dr. Bruno Haid, Doz. Dr. Fritz Judmaier, Doz. Dr. Karl Kloss, Doz. Dr. Hans Marberger,** and **Doz. Dr. Paul Wilflingseder,** all of the department of surgery at the University of Innsbruck.

The council also recommended the admission to associate membership of **Dr. Erhard Ahrer,** of the University of Innsbruck; **Dr. Josef Glaninger,** of the University of Vienna; **Dr. Horst Haschek,** of Vienna; **Dr. Hannes Steiner,** of the University of Innsbruck, and **Dr. Ernst Musil** of Vienna. All the recommendations were favorably acted upon.

Reports were heard from various officers and committee chairmen and accepted.

All the officers were renominated and enthusiastically re-elected *en bloc.* **Prof. Dr. R. Ullik,** of the First Surgical Clinic of the University of Vienna, was elected to council membership to succeed the late Prof. Plenk.

Plans for participating in the Rome Congress and for further meetings of the Austrian Section were discussed and appropriate measures were taken to keep the membership informed concerning developments.

CANADA

Joint Meeting With United States Section

The Canadian Section of the International College of Surgeons is anticipating the prospect of holding a Joint Meeting with the United States Section September 28-29, in Winnipeg, Manitoba.

The Meeting will be in conjunction with the Manitoba Medical Association, which will meet on September 26-27. It is hoped that most of those who are planning to attend one meeting will so arrange their affairs as to be able to be present at both.

Dr. Samuel S. Peikoff, F.R.C.S. (Edin.), F.R.C.S. (Can.), F.A.C.S., F.I.C.S., regent in Manitoba for the College, is general chairman, and **Dr. A. C. Abbott,** F.R.C.S. (Edin.), F.R.C.S. (Can.), F.A.C.S., F.I.C.S., is chairman of the scientific program. Both are exerting every effort to make the Joint Meeting a great success.

Women's Auxiliary

Canadian Section

THE PRESIDENT'S MESSAGE

Mrs. Karley Pinkerton

As president of this young but fast-growing auxiliary it is my pleasure to extend a very warm invitation to all of you to come and share the delightful program that is being planned.

The women in Winnipeg are doing a fabulous job in organizing women's activities for the occasion.

On the afternoon of Tuesday, September 27, there will be an organizational meeting at which we will set up our board of directors. As this is a most important aspect of the meeting, I do hope you will all come. Coffee will be served, and the occasion will be pleasant and sociable as well as organizationally significant.

A temporary nominating committee was set up last September in Toronto. Meanwhile, I want you to please give this matter some thought and send in your nominations for our first officers in the Canadian Women's Auxiliary.

Our beloved friend, Dr. Max Thorek, once said to me, "June, my dear, if you believe in anything, go and find it."

This is exactly what I am doing. I believe most sincerely in this organization, in the work that our parent body has done and is continuing to do and in the good will it has created not only on this continent but all over the world. What more can we ask of an organization than the opportunity to share with our fellow man the wealth of knowledge we gain, the warmth of friendship given freely and the joy of knowing that our membership is bringing encouragement to some young person starting up the ladder toward becoming a surgeon?

See you in Winnipeg in September!

June Pinkerton

I am interested in furthering the program of the Auxiliary to the International College of Surgeons. Enclosed is my check ($10.00 per member) covering membership(s) for the following:

NAME:... ....

ADDRESS:... ....

Make check payable to The Women's Auxiliary, Canadian Section, International College of Surgeons, and mail to Mrs. Karley Pinkerton, 1470 W. King Edward Avenue, Vancouver, B. C.

Women's Auxiliary Committee Plans Program for Visitors

Mrs. Albert C. Abbott

Mrs. Samuel S. Peikoff

The Women's Auxiliary to the Canadian Section of the International College of Surgeons is organizing a program of activities for all the women who accompany their husbands to the Joint Meeting of the Canadian and United States Sections of the College.

The general chairman of the occasion is **Mrs. A. C. Abbott** of Winnipeg. The steering committee is headed by Mrs. Abbott and **Mrs. Samuel S. Peikoff. Mrs. J. A. Miller** is secretary, and **Mrs. W. B. MacKinnon** is treasurer.

Chairmen of the sub-committees are:

Mrs. **R. O. Burrell**—Housing
Mrs. **C. W. Hall**—Social
Mrs. **A. A. Klass**—Publicity
Mrs. **R. Lyons**—Reception
Mrs. **J. T. MacDougall**—Registration
Mrs. **Samuel S. Peikoff**—Banquet
Mrs. **L. R. Rabson**—Program
Mrs. **R. L. Willows**—Transportation
Mrs. **E. Stephenson**—Nurses' Liaison

The plans for the comfort, convenience, and entertainment of visiting women are comprehensive and detailed. The women, of course, are invited to attend the dinners being officially planned as part of the Joint Meeting of the Canadian and United States Sections. In addition, there will be special activities for the ladies.

On Wednesday, after a mid-morning coffee party at the Grill Room of the Marlborough Hotel, there will be a "House Tour," followed by a visit and tea at the Art Gallery.

On Thursday, the ladies will take lunch at the Tower Room of the Town and Country Restaurant. After luncheon, they will go by bus to the Lower Fort Garry and to the Manitoba Yacht Club for a cruise on the Red River. They will return to the city in time to dress for the culminating dinner and dance.

The all-inclusive registration fee for ladies is eight dollars.

The Auxiliary, in addition to looking after women visitors, will aid the men in registering guests and will render the indispensable service of having hot coffee available quickly to all those who attend the sessions.

Mrs. W. B. MacKinnon

Mrs. James A. Miller

Mrs. Lawrence R. Rabson

Mrs. C. W. Hall

Mrs. R. O. Burrell

Mrs. John T. MacDougall

Mrs. R. L. Lyons

Mrs. R. L. Willows

Mrs. E. Stephenson

At a social hour during the Inaugural Assembly of the Ecuadorian Section: Dr. Marco Martínez, vice-president of the Pan American Medical Association; Dr. Gabriel Panchana, secretary of the Ecuadorian Section of the College; Mr. P. Holz, manager of Holger Glaesel Laboratories; Dr. Alexander Brunschwig, vice-president of the International College of Surgeons; Prof. Dr. Teodoro Maldonado Carbo, president of the Ecuadorian Section; Dr. Harry E. Bacon, president-elect, United States Section; Dr. José Ramirez D., vice-president of the Ecuadorian Section; Mr. William Moreland, consul general of the United States in Guayaquil; Mr. J. Holz, of the Holger Glaesel Laboratories; Dr. Emiliano Crespo Toral, and Dr. Rodrigo Crespo Toral

ECUADOR

Activities and Personalities of the Section

The Inaugural Assembly of the Ecuadorian Section of the International College of Surgeons, held in Guayaquil, September 30-October 4, 1959, initiated a new period of activity on the part of the Fellows of the Section. The officers and participants in the Assembly, pleased with the success of the occasion, laid definite plans for a Congress to be held in Quito during the month of October in 1960.

Meanwhile, we might consider several personalities prominent in the Section and note some of their activities.

One of the most interesting papers delivered at the 1959 Assembly was that of **Dr. Dionisio Espinoza Vega**, F.I.C.S., professor of clinical surgery at the University of Guayaquil and a leading Ecuadorian pioneer in the field of rectal surgery, who spoke on *Problems of Biliary Tract Surgery.*

A very great service was rendered to the Assembly by **Dr. Gilberto R. Peñafiel M.**, A.I.C.S., who was the very able inter-

Dr. Gilberto R. Peñafiel M.

Prof. Dr. José M. Varas

Dr. José Baquerizo M.

preter of English into Spanish and vice versa. Dr. Peñafiel presented a paper entitled *Four Hundred Anesthesias in Lung Surgery: A Review.*

The Ecuadorian Section is highly pleased that one of its distinguished Fellows, Dr. José Baquerizo Maldonado, F.I.C.S., has been appointed plenipotentiary minister and extraordinary ambassador to Spain.

Dr. Baquerizo M., former minister of education in Ecuador, is the chief surgeon of the Hospital de Aislamiento in Guayaquil and assistant surgeon of the Louis Vernaza General Hospital and the Institute of Cancerology. He has pursued postgraduate studies in Paris, Hamburg and Barcelona. Lately he worked under the direction of Prof. Carlos Jiménez Díaz and Prof. Carlos Gonzáles Bueno of Madrid.

Dr. Emiliano Crespo T., F.I.C.S., professor of orthopedics at the University of Guayaquil, has returned to Ecuador from a stay in Europe which included attendance at a seminar on rehabilitation held in Scandinavia under the sponsorship of the United Nations. Dr. Crespo served as a Fellow in orthopedics at the Boston City Hospital and Children's Hospital in Boston, U.S.A. Since 1948 he has been the chief of the orthopedic service at the Louis Vernaza General Hospital in Guayaquil.

One of the most distinguished Fellows of the Ecuadorian Section is Prof. Dr. José M. Varas, F.I.C.S., former rector of the University of Guayaquil and professor of ophthalmology at the Faculty of Medicine. who is very well known internationally because of his contributions to his specialty.

Dr. José Ramirez D.

Dr. Emiliano Crespo T.

FINLAND

Election of Officers

Prof. Dr. Paavo Vara

Members of the Finnish Section of the International College of Surgeons convened for their annual meeting and election of officers in Helsinki on February 6, 1960, with **Prof. Dr. Juuso Kivimäki,** F.I.C.S., presiding.

The following were elected to office:

PRESIDENT
  Paavo Vara, M.D., F.I.C.S., Professor of obstetrics and gynecology at the University of Helsinki

VICE-PRESIDENT
  Viljo Tuomikoski, M.D., F.I.C.S., Professor *honoris causae,* surgeon-in-chief, Yleinen Sairaala, Tampere

SECRETARY
  Harry E. Blomquist, M.D., F.I.C.S., lecturer in surgery, University of Helsinki

TREASURER
  Lauri Aro, lecturer in anesthesiology, University of Helsinki

GREECE

Lavish Entertainment for Visiting Surgeons

Athens was the last stop for the 1959 International College of Surgeons Around-the-World Postgraduate Surgical Clinics Tour, and it provided an appropriately dramatic climax to the journey.

On the one hand, the city, with its architectural and artistic monuments unequaled in beauty and historic implication and its citizenry speaking the language that Homer sang, was enchanting, and, on the other hand, keen scientific discussion with Fellows of the College and observation of their clinics, hospitals and operating rooms provided a memorable professional stimulus. In hospitality, however, the Greek Section was almost overwhelming in its gracious warmth and lavishness.

Prof. Dr. Nicholas Louros, president of the Section; **Prof. Dr. J. Charamis,** vice-president, and **Prof. Dr. N. Christeas,** general secretary, were the most thoughtful and cordial of hosts, providing a cocktail party and, on the evening of Saturday, November 28, a closing banquet which was a splendid feast of food and wit.

At a cocktail party: Mme. Nicholas Louros, Dr. H. Winkler, Dr. Edward L. Compere, Mrs. Edward L. Compere, Dr. Nicholas Louros and Dr. E. L. Jewett

Prof. Louros' Address

Three hundred years passed after the appendix was discovered before, early in the Twentieth Century, surgical treatment for appendicitis was generally accepted. Probably, at that, acceptance was less the result of scientific effort as of the survival of Edward VII of England, who had undergone a successful operation, performed by Treves, a few days before his coronation. Just as the administration of an analgesic agent to Queen Victoria in one of her labors led to more general use of obstetrical analgesia, so also her son's experience resulted in more frequent employment of suitable surgical procedure in the treatment of a disease which, up to that time, had claimed a great number of victims.

These examples are characteristic of the way in which, in the old days, a therapeutic procedure became widely known. It took a crowned head to establish the value, in people's minds, of a new method. Publicity did not readily follow remarkable results achieved through innovations in technic if the patients so treated were more humble. There was a lack of timely communication between scientists and too little interest in specialized problems.

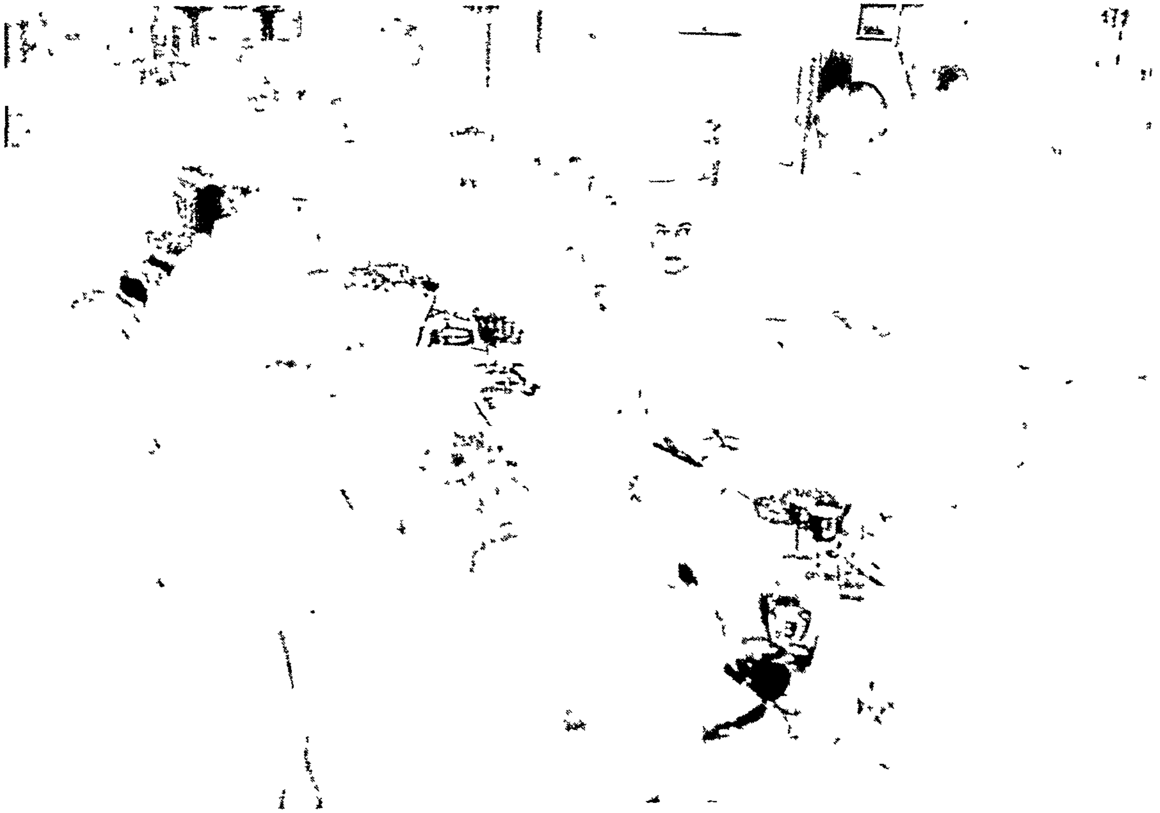
Nowadays, the medical press and medical congresses have established rapid and effective means of communication so far as research, methods and results of therapeutic procedure are concerned.

However, what mostly promotes medical science and leads to the recognition of valuable advances in technic and management is personal contact between doctors and especially between surgeons. Through personal acquaintance and straightforward discussion, the results of research become known, misunderstandings are avoided and the usefulness of a therapeutic method is soon widely and properly tested and justly evaluated.

Improvement in transportation has effectively contributed to the broad dissemination of knowledge and has given wings to doctors that they may visit each other and can see, on the spot, as it were, what's going on, all over the world.

Such wings, available with particular ease and comfort to the members of the International College of Surgeons, have brought you to us. We cordially welcome you and wish that the short time you spend with us will prove to be beneficial to us all.

We thank you for your visit. Please be good enough to convey to our colleagues in your great country our warm regards. May we hope that you will keep an agreeable remembrance of your visit to Hellas.



At dinner, Prof. Louros speaking

HAITI

Governmental Honors to Fellows of the Section

Three members of the Haitian Section of the International College of Surgeons were presented by the government of Haiti with the Order of Health on the occasion of World Health Day, which was celebrated on April 7, 1960.

The Fellows so honored were Dr. Martial Beurand, Dr. Antoni Léveque and Dr. Paul Bonhomme.

Dr. Antoni Léveque

HONG KONG

Officer of Section Sponsors Music Training for the Blind

Dr. Renald Ching

One of the most successful refugee relief projects undertaken anywhere is the Hong Kong Music Training Center for the Blind, organized less than three years ago by Dr. Renald Ching, ophthalmologist and secretary of the Hong Kong Section of the International College of Surgeons.

Dr. Ching and his wife, Louise, appalled at the plight of blind orphan refugee children, organized a training center for those who possess potential musical ability. They interested teachers, sighted music students and other volunteers to offer their services, with the result that the Center is now represented by a fine chorus with strings and flute accompaniment which gives concerts, takes part in church services and participates in music festivals.

The idea of this music center is one of the most constructive contributions ever made to the problem of blind refugees. Meanwhile Dr. and Mrs. Ching would be happy to hear from anyone who wishes to aid the center. They can be reached at 107 Austin Rd., Kowloon, Hong Kong.

MEXICO

A letter from Prof. Dr. Raul Arturo Chavira, president of the Mexican Section of the International College of Surgeons, states that Dr. Miguel López Esnaurrizar, who attended the Twenty-Fourth Annual Congress of the North American Federation of the International College of Surgeons in Chicago, September 13-17, 1959, and presented a paper before the General Assembly of the Congress, did so not as an official representative of the Section.

We regret that any misunderstanding exists regarding the matter.

NICARAGUA

The Nicaraguan Section of the International College of Surgeons is planning its First National Symposium in Surgery in October 1960 in the city of Leon.

The meeting will be held at the Assembly Hall of the Autonomous National University and Leon City Hospital.

The Section held a regional symposium on March 20 in Masaya at the Masaya City Hospital.

Dr. Humberto Alvarado is vice-president and **Dr. Reinaldo Tückler Salinas** is secretary of the Nicaraguan Section of the International College of Surgeons.

PAKISTAN

Golden Jubilee of the Henry Holland Hospital

During the month of January 1960, a tremendous celebration was held in Northwest Pakistan, honoring the golden jubilee of the founding of the Henry Holland Hospital in Shikarpur. Through the fifty years of its existence, the hospital, operating during the months of January and February of each year, has ministered to thousands of patients.

The year 1960 also marks the sixtieth year of the arrival of **Sir Henry T. Holland** in Quetta, and it was a matter of general rejoicing that, accompanied by Lady Holland and Dr. Harry Holland, Sir Henry came once more from England to the scene of his great achievements.

The celebration was attended by people from all over Pakistan. The general populace paraded through Shikarpur, shouting, *Holland Sahib Zindabad! Pakistan Zindabad!* (Long live Sir Henry Holland! Long live Pakistan!) Sir Henry is truly a national hero in West Pakistan.

Sir Henry Holland, M.B., Ch.B., F.R.C.S., F.I.C.S. (Hon.), now lives at his home, the Fairfields, in Farnham, Surrey, England. A world-famous pioneer in ophthalmologic surgery, he was born in Durham, England, in 1875, and received his surgical training at the University of Edinburgh, Scotland. The hospital which he founded is now directed by **Dr. Ronald W. B. Holland.**

One of the principal addresses of the celebration was made by **Dr. Roland I. Pritikin,** F.A.C.S., F.I.C.S., of Rockford, Illinois, president of the Henry Holland Hospital Alumni Association, an organization of visiting eye surgeons from the United States who have been coming to Shikarpur since 1911. In honor of the celebration, the association presented to the hospital a new Land Rover jeep-ambulance. This will be used by Dr. R. W. B. Holland to bring ophthalmologic surgical care and other medical care direct to remote villages.

SWITZERLAND

Dr. E. Kaiser, F.I.C.S.
President
SWISS SECTION

The Swiss Section of the International College of Surgeons held its first scientific meeting of the year in Zurich, on January 29 and 30, 1960, under the presidency of Dr. E. Kaiser. There was a large attendance.

The meeting was opened with an announcement of the deaths of the founder and secretary general of the College, Dr. Max Thorek, and Dr. Ross T. McIntire, its executive director. **Prof. Oltramare**, secretary general of the European Federation, read a solemn message, and the president of the Swiss Section, **Dr. E. Kaiser**, delivered a memorial address in honor of those two prominent personalities of outstanding merit. The assembly rose and observed a reverent period of silence.

The scientific meeting began with demonstrations, accompanied by two films, of the latest endoscopic methods and of heart surgery. A discussion followed.

The second day was dedicated to a symposium on surgery of the bile duct.

Dr. Fahrländer spoke in a masterly way on clinical symptoms, roentgen diagnosis, differential diagnosis and laboratory tests for diseases of the liver and the bile duct, with special reference to roentgen and enzyme diagnosis.

Prof. Calame's report dealt with the diagnosis and treatment of diseases of the pancreas. With the aid of roentgenograms he demonstrated intraoperative pancreatic conditions, trans-sphincterial drainage of the pancreatic duct, and discussed the latest considerations of enzyme diagnosis, as well as the surgical possibilities in cases of inflammatory and neoplastic diseases of the pancreas.

Dr. Kaiser explained modern technics of surgery of the bile duct, including manometria and intra-operational cholangiography. He particularly stressed differential diagnosis in diseases of Vater's papilla.

Prof. Willenegger reported on the treatment of these diseases by papillosphincterotomy. He presented a thorough description of this technic by means of diagrams and lantern-slides. He pointed out its dangers and its important advantages, and sharply differentiated it from other therapeutic possibilities.

Dr. Häberlin and **Dr. Simon-Weidner** discussed the choledoscopic technic with reference to diagnosis by means of the new instrument designed by Wolf, showing at the same time the surgical possibilities offered by the endoscopic approach, such as the removal of stones, fulguration of polyps and sphincter splitting.

Excellent films and lantern slides completed these reports.

The meeting ended with a general discussion directed by **Dr. Hafter**, which was mainly centered on the problem of carcinoma of the gallbladder.

Medical News Front

YALE SCHOOL OF MEDICINE TO CELEBRATE SESQUICENTENNIAL

The Yale School of Medicine will celebrate a century and a half of existence on October 28 and 29 of this year. The occasion will be marked by meetings, exhibitions and addresses suitable to the occasion. Among a notable group of guest speakers will be **Sir Howard Florey** of Oxford, England.

It was in October 1810 that the Connecticut General Assembly granted a charter to Yale College for the establishment of the Medical Institution of Yale College and the fifth medical school in the United States came into being.

The first medical faculty at Yale was a notable one, containing Eneas Munson, foremost authority on materia medica, Nathan Smith and Benjamin Silliman, still counted among Yale's greatest, Eli Ives and Jonathan Knight, leaders in medicine and each to become President of the American Medical Association.

EXCERPTA MEDICA FOUNDATION TO PUBLISH "VOICE OF MEDICINE"

The Excerpta Medica Foundation, a non-profit international organization, founded in 1946 to abstract and disseminate the medical literature of the world, has decided to begin publication of a recorded medical journal under the title of *Voice of Medicine,* which will contain recordings of discussions and interviews taken during national and international medical congresses, clinical-pathological conferences, world health assemblies, medical meetings and symposia. Included will be discussions by leading specialists on subjects of current medical interest arranged by Excerpta Medica on an international level.

CONGRESS OF CZECHOSLOVAK SOCIETY OF ORTHOPEDIC SURGERY AND TRAUMATOLOGY

The Czechoslovak Society of Orthopedic Surgery and Traumatology took place in Brno, April 26-30, 1960.

All the lectures were simultaneously translated into English, Czech, Russian, French and German. Clinical sessions were held at the orthopedic clinic of **Prof. Bedrich Frejka**, the orthopedic section of the Children's Hospital, headed by **Dr. Milos Janecek**, and the Institute for Rehabilitation, the chief of which is **Dr. M. Moskova.**

The Congress addressed itself comprehensively to the subject of scoliosis, considering such phases as training of normal bodily postures, origin and prevention of scoliosis, conservative treatment of idiopathic scoliosis and the operative treatment of scoliosis.

Prof. Bedrich Frejka is president of the Czechoslovak Orthopedic Society. Dr. Milos Janecek served as secretary of the Congress.

BERLIN CHARITÉ ANNIVERSARY CELEBRATION

The celebration of the two hundred and fiftieth anniversary of the Charité will be held in Berlin from November 6 to November 19, 1960, in connection with the one hundred and fiftieth anniversary of the Humboldt University.

Applications for participation are to be directed to the Committee for the Observance of the Anniversary of the Charité, Berlin N 4, Schumannstrasse 20-21, c/o Dozent Dr. med. habil. Dagobert Müller, secretary of the committee.

FOURTH INTERNATIONAL GOITER CONFERENCE

The Fourth International Goiter Conference will be held at the Royal College of Surgeons, London, England, July 5-9, 1960. Abstracts of American papers to be considered for presentation should be sent to J. E. Rall, M.D., National Institute of Arthritis and Metabolic Diseases, National Institutes of Health, Bethesda 14, Maryland. Abstracts from all other countries are to be sent to Dr. Selwyn Taylor, 3 Roedean Crescent, Roehampton, London, S.W. 3, England.

THE VAN METER PRIZE AWARD

The American Goiter Association again offers the Van Meter Prize Award of three hundred dollars to the essayist submitting the best manuscript of original and unpublished work concerning *Goiter—Especially Its Basic Cause*. The studies so submitted may relate to any aspect of the thyroid gland in all of its functions in health and disease. The award will be made at the Fourth International Goiter Conference in London, England, July 5-9, 1960, where a place on the program will be reserved for the winning essayist if he can attend the meeting. For 1960, the recipient of the award will receive consideration for an award of a travel honorarium.

For information, write John C. McClintock, M.D., 149½ Washington Avenue, Albany 10, New York.

1960 NATIONAL CANCER CONFERENCE

The Fourth National Cancer Conference, sponsored by the American Cancer Society, Inc., and the National Cancer Institute, will be held in Minneapolis, Minnesota, September 13-15, 1960.

The theme of the Conference will be *Changing Concepts Concerning Cancer*.

THE GOULD AWARD

The international committee for the Gould Award announces the selection of the recipient for the year 1959—Prof. Joel J. Pressman, M.D., University of California at Los Angeles—for his anatomic and radio-isotope studies of laryngeal compartments.

The Gould Award is presented annually for basic research in laryngology to encourage and reward fundamental investigations in this field, and consists of a plaque and a three-hundred-dollar honorarium.

NOTICE FROM ITALIAN SOCIETY OF GASTROENTEROLOGY

The Directive Council of the Italian Society of Gastroenterology, having met in Bologna on March 6, 1960, and learned on this occasion that an "International Symposium of Proctology (latina)" was going to be held in Rome, May 13-14, 1960, wishes to advise that this meeting had nothing in common with the Italian Society of Gastroenterology, which comprises an Italian Section of Proctology.

AMERICAN MEDICAL ASSOCIATION POST-CONVENTION MEETING IN NASSAU

A Post-Convention Meeting of the American Medical Association in Nassau in the Bahamas will be conducted by the Bahamas Conferences June 18-25, 1960, following the A.M.A. meeting in Miami Beach.

Papers will be presented each morning from 9:30 a.m. to noon and in the evening from 6:00 p.m. to 7 p.m., at the Emerald Beach Hotel, headquarters for the conference.

In Memoriam

WILLIAM JAMES MOORE

F.R.F.P.S., F.I.C.S.

1885-1959

William James Moore
F.R.F.P.S., F.I.C.S.

Mr. William James Moore, F.I.C.S., died at his home in Glasgow on November 13, 1959.

Through his death, Glasgow and the west of Scotland have lost a distinguished surgeon and an outstanding personality.

Mr. Moore was born on May 15, 1885. He took the Scottish triple qualification in 1911. He did postgraduate work at Glasgow University and the Radium Institute in London. In Paris he studied at the Hospital of St. Anthony, the Institute of Doyen and the Pasteur Institute. He spent some time in Canada and was associated with the Royal Victoria Hospital in Montreal and the General Hospital in Winnipeg.

He was elected a Fellow of the Royal Faculty of Physicians and Surgeons of Glasgow in 1918 and a member of the College of Physicians and Surgeons of Manitoba in 1924. For some years he was a surgeon to the Victoria Infirmary and an assistant surgeon to the Royal Samaritan Hospital in Glasgow. At one time he held the appointments of senior assistant to the professor of surgery and anatomy in the Anderson College of Medicine, and he was an examiner for the Scottish Nursing Council.

He served as a justice of the peace for the city of Glasgow. A man of strong opinions, he had the courage of his convictions.

He lived for his profession and had few interests outside his surgical practice and his research work. An outstanding anatomist, he delighted in coaching students for examinations, and many doctors prominent in the profession today have benefited from his ungrudging help. He wrote copiously and contributed articles to all the leading surgical journals. His wide experience and specialized knowledge were always at the disposal of his colleagues, who will miss him greatly.

Mr. Moore was a faithful Fellow of the International College of Surgeons, enthusiastic about its Surgeons' Hall of Fame, and delighted to contribute bits of historical information for its archives. He wrote an interesting article about Prof. John Macintyre, which appeared in the May 1959 issue of the *Bulletin.* The article elicited a good deal of favorable comment and led to considerable correspondence with surgeons who had known Prof. Macintyre or were interested in his career.

Many people in all walks of life will miss Mr. Moore's spirited personality. The College extends its sympathy to his friends and associates.

In Memoriam

LT. COL. K. G. PANDALAI

M.B., C.M., F.R.C.S. (Eng.), F.I.C.S. (Hon.), I.M.S. (Ret.)

1885-1960

I regret exceedingly to announce that Col. K. G. Pandalai, eminent surgeon and former president of the Indian Section of the International College of Surgeons, expired on the fifth of February 1960 of sudden heart failure.

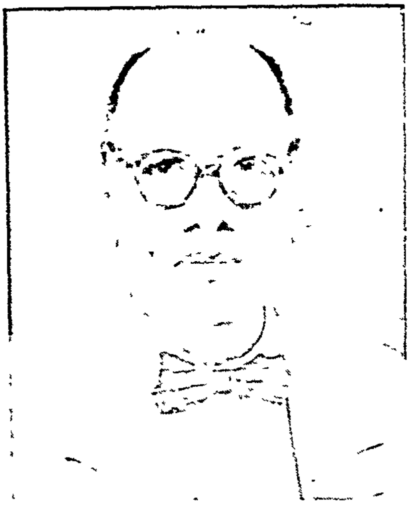
Col. Pandalai was born at Mavelikara (Kerala State) on May twenty-fourth, 1885. He was the fourth in a family of five brothers, the eldest of whom, the late Justice K. K. Pandalai, was a distinguished judge of the Madras High Court.

Col. Pandalai received his early education at Mavelikara and at Trivandrum. He took his M.B., C.M. degree at the Madras Medical College in 1909. He then went to London and joined the Middlesex Hospital and took the conjoint diploma of M.R.C.S. and L.R.C.P. He sat for the competitive examination for I.M.S. officers in 1911 and was selected. Having undergone training in military law and administration at Aldershot, he returned to India in 1912 and was posted to Bangalore.

During World War I he saw service in Aden and East Africa and returned to India in 1918 after taking his F.R.C.S.

Dr. Pandalai was married during the same year. He was then posted to the Madras General Hospital as civil surgeon and appointed professor of surgery at the Madras Medical College. He later was chosen superintendent of the Hospital and planned and supervised its general remodeling in 1934-1935.

Since retiring from the Service in 1937, Col. Pandalai engaged in private practice in his own nursing home at Binfield, Poonamallee High Road in Madras.



K. G. Pandalai
M.B., C.M., F.R.C.S. (Eng.),
F.I.C.S. (Hon.), I.M.S. (Ret.)

Dr. Pandalai was the founder-president of the Association of Surgeons of India and editorial chairman of the *Indian Journal of Surgery* since its inception.

In 1955 he was elected president of the Indian Section of the International College of Surgeons, and at the International Congress of the College held at Chicago in September 1956, Honorary Fellowship was conferred upon him.

Col. Pandalai was a valued member of the International Board of Governors and, as a vice-president of the College, an influential member of the executive committee.

Expressions of sympathy have been received from the officers and members of the Board of Governors of the College and have been extended to the family of our honored former president.

C. P. V. Menon
PRESIDENT, INDIAN SECTION

In Memoriam

HUGH VINCENT FALL

M.D., F.I.C.S.

1882-1959

Dr. Hugh Vincent Fall, F.I.C.S., of Roswell, New Mexico, died on September 18, 1959, after an illness of sixteen months.

Dr. Fall was born in Dora, Indiana, on October 14, 1882. He received his high school education at Dora and at Winona Lake, Indiana, and his academic training at Tri-State Normal College at Angola, Indiana. He then enrolled at Toledo Medical College in Toledo, Ohio, and was awarded the M.D. degree in 1907. He served internships at Lucas County and Robinwood Hospitals in Toledo.

During World War I, Dr. Fall served as ward surgeon at U.S. Army Hospital No. 21 (Fitzimmons) in Denver, Colorado, and on the discharge board.

He continued postgraduate surgical study at various clinics in Chicago, New York and Rochester, Minnesota.

He was on the staff of St. Mary's Hospital in Roswell and at various times held office, including the presidency, in the New Mexico Medical Society and in the Chaves County Medical Society.

Dr. Fall was highly regarded in his community both for his professional and his civic services, and greatly respected by fellow surgeons.

The officers and members of the Board of Governors of the International College of Surgeons wish to extend to Mrs. Fall and the family their very sincere sympathy.

ROBERT HENNER

M.D., F.I.C.S., D.A.B.

1909-1960

We very sadly report the death, on January 21, 1960, of Dr. Robert Henner, F.I.C.S., D.A.B., of Chicago and Highland Park, Illinois, otologist and assistant clinical professor of otolaryngology at the University of Illinois College of Medicine.

Dr. Henner was a native of Chicago and was educated in its public schools. He received his academic degree of bachelor of science from the University of Illinois in 1931 and his doctorate in medicine from the University of Illinois College of Medicine in 1934.

He served a rotating internship and a year's residency at Michael Reese Hospital, followed by a year's residency at the Illinois Eye and Ear Infirmary in Chicago. He continued his postgraduate work at the Harvard Medical School and the Massachusetts Eye and Ear Infirmary.

Returning to Chicago, he spent the next three years in charge of basic instruction and full time duty at the Illinois Eye and Ear Infirmary.

In 1938 he took special training with Dr. Julius Lempert, and from 1942 to 1946 served as flight surgeon major in the army of the United States.

He had served on the staffs of Michael Reese Hospital and the Illinois Eye and

Ear Infirmary before going into service, and upon returning to civilian life began his teaching career at the University of Illinois College of Medicine, and became associated with the Veterans Administration Hospital at Hines and the U. S. Naval Hospital as consultant in fenestration.

Dr. Henner was a diplomate of the American Board of Otolaryngology and was a member of the American Medical Association, the Chicago Otolaryngology and Laryngology Society, the American Academy of Otolaryngology and Ophthalmology, the American Laryngological, Rhinological and Otological Society, and the American Otolaryngology Society. He also was an honorary member of the Cleveland and Cuban Otolaryngology Societies.

Dr. Henner's contributions to the literature of his specialty appeared in *The Laryngoscope*, the *Annals of Otology, Rhinology and Laryngology*, the *Archives of Otolaryngology, The Eye, Ear, Nose and Throat Monthly*, and the *Journal of the American Medical Association.*

Dr. Henner is survived by his wife, Janet Straus Henner, by his daughter Jill and his sons Michael and Adam, and by his brothers H. I. and Benjamin Henner.

Dr. Henner's untimely death is mourned widely. The officers and members of the Board of Governors of the International College of Surgeons extend their very sincere sympathy to Dr. Henner's family.

FRANK ERDMAN BOSTON

M.D., F.I.C.S.

1890-1960

Dr. Frank Erdman Boston, F.I.C.S., of Lansdale, Pennsylvania, passed away on February 8, 1960, in the Albert Einstein Medical Center in Philadelphia.

Dr. Boston was born in Philadelphia on March 10, 1890, and had his preliminary education at the West Grove, Pennsylvania, High School. He then studied at Lincoln University. He took a Ph.G. degree from its College of Pharmacy in 1911, and then went on to study medicine, getting his doctorate in 1915.

He had his internship at Roosevelt Hospital (1915-1917) and during the next two years (1917-1919) served in the U. S. Army Medical Corps.

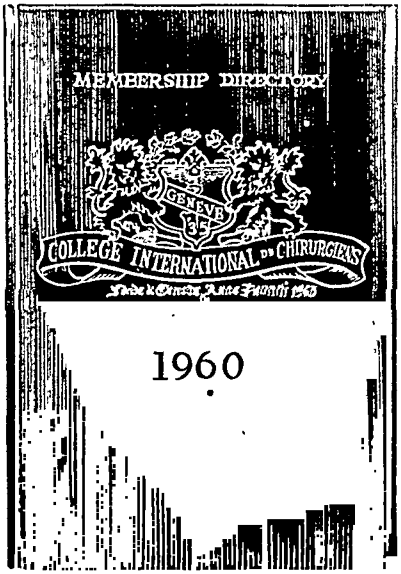
From 1919 to 1930, he was an instructor in anatomy at Temple University, and from 1935 to 1949 chief surgeon at Mercy Hospital in Philadelphia. In 1933 he founded a hospital in Lansdale, Pennsylvania, which at first was called the Elms Terrace Hospital but now is known as the North Penn Hospital.

Dr. Boston was a member of the American Medical Association, the Philadelphia County Medical Society, the Northern Medical Association, the Association of Military Surgeons and the Ambulatory Fracture Association.

He was highly regarded by the profession for his skill and ability and greatly beloved in his own and surrounding communities for his devoted service and humanitarian attitudes. His death was a great loss to his friends and associates, and to them the officers and members of the College extend their sincere sympathy.

MEMBERSHIP DIRECTORY

International College of Surgeons



The International College of Surgeons is preparing a

Membership Directory

listing all its members both alphabetically and geographically and with pertinent information about each member.

The volume will include the Constitution and Bylaws of the College, information on qualifications for membership and a description of College activities.

The publication of the Directory will entail an expense to the College of between 25 and 30 thousand dollars. The material is now being prepared for the printer.

Pre-publication price for a copy of the Membership Directory is $5.50—after publication $7.50.

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Directory Department
International College of Surgeons
1516 Lake Shore Drive
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